EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-10

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-16-011	11/01/2016 To 06/30/2019 Base Option Period Number 2	Atmospheric Mercury Modeling

Contractor	Specify Section and paragraph of Contract SOW
ICF Incorporated, L.L.C.	3.1,3.3,3.5, 3.6

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 11/21/2018 To 06/30/2019

Comments: Immediate Start Authorized

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (*Max 2*): ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

Contract Period: 11/01/2016 To 06/30/2019 — Cost/Fee: — LOE:

This Action:

Total:

Work Plan / Cost Estimate Approvals

Contractor WP Dated: — Cost/Fee — LOE:

Cumulative Approved: — Cost/Fee — LOE:

Work Assignment Manager Name: Carol Peterson (Signature) (Date)	Branch/Mail Code: Phone Number: 202-566-1304 FAX Number:
Project Officer Name: Shirley Harrison (Signature) (Date)	Branch/Mail Code: Phone Number: 202-566-1107 FAX Number:
Other Agency Official Name: Shirley Harrison (Signature) (Date)	Branch/Mail Code: Phone Number: 202-566-1107 FAX Number:
Contracting Official Name: Angela Lower (Signature) (Date)	Branch/Mail Code: Phone Number: 513-487-2036 FAX Number:

PERFORMANCE WORK STATEMENT
ICF CONTRACT EP-C-16-011
WORK ASSIGNMENT #2-10

TITLE: Computational Modeling Support to Examine Mercury Loads to US Waterbodies via Atmospheric Deposition

WORK ASSIGNMENT CONTRACTING OFFICER'S REPRESENTATIVE (WACOR)

Carol Peterson (Mail Code 4503T)
Office of Water, Office of Wetlands, Oceans and Watersheds
US Environmental Protection Agency (USEPA)
Washington, DC 20460
Telephone: 202-566-1304
Peterson.carol@epa.gov

PERIOD OF PERFORMANCE: Date of Issuance through June 30, 2019.

CONTRACT PWS: 3.1, 3.3, 3.5, and 3.6

Background and Purpose

Mercury contamination of waterbodies presents a near ubiquitous problem across the continental US, resulting in numerous violations of State water quality standards. Under Section 303(d) of the Clean Water Act (CWA), States are required to list these waters as impaired and prepare TMDLs (Total Daily Maximum Loads) that in part identify the sources responsible. TMDL Implementation Plans can then follow, which outline steps to be taken to reduce the amounts of pollutants entering the affected waterbodies to acceptable levels.

For mercury, the dominant source in most waterbodies is atmospheric deposition. In 2008, ICF prepared a report that outlined modeling they conducted for EPA that allowed key emission sources in each state to be followed, or "tagged", along with emissions from Canada, Mexico and from the global background in order to facilitate State's being able to assign source attribution allocations in their TMDL and related programs. (See: Model-Based Analysis and Tracking of Airborne Mercury Emissions to Assist in Watershed Planning, August 5, 2008, Prepared for US EPA Office of Water by ICF International, San Rafael, CA). That modeling work was used by numerous States in preparing an initial round of TMDLs and related planning analyses, but is now outdated and in need of revision. The purpose of this work assignment is to update that earlier work with current state of the art modeling tools and inputs, such as meteorological data and emission inventories.

Quality Assurance:

The tasks (Tasks 2 - 5) in this work assignment require the use of secondary data. Consistent with the Agency's quality assurance (QA) requirements, the contractor shall follow the approved ICF March 2017 Programmatic QAPP (pQAPP) to assure the quality of the data used under this work assignment. The scope of the March 2017 pQAPP covers secondary data review, existing peer reviewed model application, but does not anticipate data generation or acquisition.

The project specific quality assurance requirements must be addressed in the workplan and monthly progress reports as specified under Task 1. The contractor shall discuss with the WACOR if any of the specific work assignment tasks are not readily covered under the approved pQAPP. Any additional

quality assurance requirements must be addressed in the work plan and monthly progress reports and, if needed, be covered by a WA-specific QAPP supplement, which must be approved by the WACOR before activities covered by the additional QA language begin under this work assignment.

Task 1: Work Plan and Monthly Progress Reports

Task 1.1. Work Plan

The contractor shall develop a work plan to address all tasks in this work assignment. The work plan shall include a schedule, staffing plan, level of effort (LOE), and cost estimate for each task, the contractor's key assumptions on which staffing plan and budget are based, and qualifications of proposed staff. If a subcontractor(s) is proposed and subcontractors are outside the metropolitan DC area, the contractor shall include information on plans to manage work and contract costs. All P levels, hours and total dollars for each task will be provided and costs greater than $100.00 shall be itemized in detail. The contractor shall provide their job number with all invoices to facilitate their expediency.

Task 1.2. Monthly Progress Reports

The contractor must submit monthly progress and financial reports. The monthly progress reports must contain expenditures (*i.e.*, LOE and costs) on a per task basis. The monthly progress report also shall indicate, in a separate QA section, whether significant QA issues have been identified and how they are being resolved. The contractor shall provide the WACOR with regular updates detailing progress and notify the WACOR immediately of any encountered problems.

Task 1.3. Information Quality Guidelines

The contractor shall ensure the products developed under this work assignment comply with the EPA Information Quality Guidelines (http://www.epa.gov/quality/informationguidelines/) and shall complete the Checklist for Influential Information, as needed, for each deliverable from this work assignment. At the end of the work assignment, the contractor shall provide a memorandum describing how the planned product(s) developed for this work assignment meet with EPA's Checklist for Influential Information and documenting the quality assurance procedures that were used in developing the deliverables under this PWS.

Task 2: Inventory Preparation

Due to a scaled down approach, this task has been modified from the previous task in Option Period 1.

In consultation with the EPA WACOR, the contractor shall identify and obtain the most recently available nationwide inventories for mercury and criteria pollutants necessary to address the atmospheric chemistry of mercury. EPA will provide its Emissions Inventory from the 2014 NATA as well as Hg speciation information, as available. From the inventory, the contractor and the WACOR will derive a list of states that will be part of this workplan. For each state on the list, the contractor shall work with the WACOR to identify the emitters of total mercury and divalent gaseous mercury and select which individual sources will be "tagged" in the subsequent modeling (pending availability of funds). The contractor, in consultation with the WACOR, shall ensure that the emissions of tagged sources in the emissions inventory obtained during this WA are accurate. Minor modifications to the inventory are expected.

Deliverable: Due date: 2 months after completion of Task 1.

Task 3: Meteorological Data Preparation

The contractor shall continue to identify and obtain meteorological data to facilitate deposition modeling on a nationwide 12km by 12km scale that would correspond to the same year as the emission inventory data outlined in Task 2 above. The NATA meteorological data will be made available by EPA. These data will be configured for input into the latest version of CMAQ for modeling described in Task 4. Minor adjustments are anticipated.

Deliverable: Due date: 2 months after completion of Task 1.

Task 4: Deposition Modeling

Task 4a: CMAQ Code Update.

The contractor shall identify and obtain meteorological data to facilitate deposition modeling on a nationwide 12km by 12km scale that would correspond to the same year as the emission inventory data outlined in Task 2 above. These data will be configured for input into the latest version of CMAQ for modeling described in Task 4.

Deliverable Due date: 1 month from completion of Task 1.

Task 4b: CMAQ Model Runs.

The contractor shall obtain the latest version of the CMAQ model from EPA's Office of Research and Development (ORD). The model shall be initialized using the emission inventories and meteorological data described in Tasks 2 and 3 above. CMAQ is to be run at a 12km by 12km grid system spacing covering the continental US, extending an appropriate distance (as determined with consultation with EPA) into Canada and Mexico. Boundary conditions shall be established with outputs from the GEOS-Chem model. The contractor shall divide the US mercury emission sources into a series of tags of individual and grouped sources which will allow post-processing to determine total contributions to atmospheric deposition by all sources. The specific tags will be provided to ICF by the WACOR.

Deliverable: Due date: 1 month from completion of Tasks 2 and 3

Task 5: Report and Final Data Preparation

The contractor shall compile a report documenting the methodologies followed, data bases used, quality assurance steps taken, and model evaluation (comparing results to appropriate monitoring data). The report shall also contain, at a minimum, a map of each state showing the deposition mapping results and identifying the grid cell in each state where that state's sources contributed the greatest percentage to deposition in that state. An attribution pie chart assigning deposition amounts for that grid cell shall be included. The contractor shall also transfer to EPA files containing the raw, tag-specific modeling outputs. The IQG checklist and a final QA statement detailing the QA/QC procedures for compiled data and any summaries generated in this work assignment are also required as part of the final report.

Deliverables: Due dates: Initial draft final report due within 1 month after completion of Task 4b. The WACOR will provide comments on the draft within 1 month from receipt and the contractor shall prepare a final report within 1 month of receiving comments; Transfer of raw data outputs, model executable(s), input files and all files associated with the modeling effort are due to the WACOR within 1 month after completion of Task 4b.

Deliverables and Schedules

Task	Deliverable/Milestone	Due Date
Task 1	Workplan, Monthly Progress Reports, Quality Assurance and IQG	Per contract requirement
Task 2	Inventory Preparation	Due date: 2 months after completion of Task 1
Task 3	Meteorological Data Preparation	Due date: 2 months after completion of Task 1
Task 4	Deposition Modeling	
	4a. Identify and Obtain Model runs (GEOS-Chem) from ORD or similar Source	Due date: 1 month after completion of Task 1
	4b. Obtain latest version of the CMAQ Model from ORD	Due date: 1 months after completion of Tasks 2 and 3.
Task 5	Report and Final Data Preparation	Due date: Initial draft due within 1 month from completion of Task 4b; the WACOR will provide comments within 1 month of receipt; the contractor shall prepare a final report within 1 month of receiving the Agency's comments; Transfer of raw data outputs are due within 1 month from completion of Task 4b.

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-10

☐ Other ☒ Amendment Number: 000001

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-16-011	11/01/2016 To 06/30/2019 Base Option Period Number 2	Atmospheric Mercury Modeling

Contractor	Specify Section and paragraph of Contract SOW
ICF Incorporated, L.L.C.	3.1,3.3,3.5, 3.6

Purpose:
- ☐ Work Assignment
- ☒ Work Assignment Amendment
- ☐ Work Plan Approval
- ☐ Work Assignment Close-Out
- ☐ Incremental Funding

Period of Performance: From 11/21/2018 To 06/30/2019

Comments:
WA 2-10 has been cancelled. The contractor shall cease work and no further charges should be incurred on this work assignment.

☐ Superfund — Accounting and Appropriations Data — ☒ Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (*Max 2*) ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

	Contract Period:	Cost/Fee:	LOE:
	11/01/2016 To 06/30/2019		
This Action:			
Total:			

Work Plan / Cost Estimate Approvals

Contractor WP Dated:	Cost/Fee	LOE:
Cumulative Approved:	Cost/Fee	LOE:

Work Assignment Manager Name: Carol Peterson (Signature) (Date)	Branch/Mail Code: Phone Number: 202-566-1304 FAX Number:
Project Officer Name: Shirley Harrison (Signature) (Date)	Branch/Mail Code: Phone Number: 202-566-1107 FAX Number:
Other Agency Official Name: (Signature) (Date)	Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: Angela Lower (Signature) (Date)	Branch/Mail Code: Phone Number: 513-487-2036 FAX Number:

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-11

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-16-011	11/01/2016 To 06/30/2019 Base Option Period Number 2	Steam Electric Reconsidertion

Contractor	Specify Section and paragraph of Contract SOW
ICF Incorporated, L.L.C.	3.4 and 3.5

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 07/01/2018 To 06/30/2019

Comments:

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (*Max 2*): ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

Contract Period:	Cost/Fee:	LOE:
11/01/2016 To 06/30/2019		0
This Action:		2,100
Total:		2,100

Work Plan / Cost Estimate Approvals

Contractor WP Dated:	Cost/Fee	LOE:
Cumulative Approved:	Cost/Fee	LOE:

Work Assignment Manager Name: James Covington (Signature) (Date)	Branch/Mail Code: Phone Number: 202-566-1034 FAX Number:
Project Officer Name: Shirley Harrison (Signature) (Date)	Branch/Mail Code: Phone Number: 202-566-1107 FAX Number:
Other Agency Official Name: (Signature) (Date)	Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: Sandra Stargardt-Licis (Signature) (Date)	Branch/Mail Code: Phone Number: 513-487-2006 FAX Number:

PERFORMANCE WORK STATEMENT
ICF CONTRACT EP-C-16-011
WORK ASSIGNMENT #2-11

Title: Economic and Litigation Support for Steam Electric

Work Assignment Contracting Officer Representative (WACOR):
James C. Covington, III (MC-4303T)
Engineering and Analysis Division (EAD)
Office of Water, Office of Science and Technology
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460
Phone: (202) 566-1034 Fax: (202) 566-1053
E-mail: covington.james@epa.gov

Alternate Work Assignment Contracting Officer Representative (AWACOR)
Ashley Allen (MC-4303T)
Engineering and Analysis Division (EAD)
Office of Water, Office of Science and Technology
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460
Phone: (202) 566- Fax: (202) 566-1053
E-mail: allen.ashley@epa.gov

Estimated Level of Effort: 2,100

Period of Performance: July 1, 2018 through June 30, 2019

Background:
The 1972 Clean Water Act (CWA) directs EPA to develop national technology-based regulations for categories of industries that discharge pollutants directly to surface waters (effluent guidelines) or that discharge pollutants indirectly through sewage treatment plants (pretreatment standards). The CWA also directs EPA to develop national technology-based regulations for new industrial facilities (new source performance standards). One of the factors specified by the CWA is that effluent guidelines and standards must be economically achievable.

In addition, under Executive Orders 12866 and 13563, EPA is required to estimate the potential benefits and costs to society. The purpose of this work assignment (WA) is to evaluate the costs, economic achievability, including those to small entities and benefits of revised regulations on the steam electric industry.

The contractor shall conduct all analyses requiring the collection and manipulation of data and models in accordance with the EPA approved quality assurance (QA) project plan that was developed for this work. The QA project plan shall describe the procedures for assuring the

quality of the primary and secondary economic data used for this work assignment. **This work assignment is a continuation of the previous WA (1-11). Due to Senior management decisions on the rulemaking, as discussed further below, this WA includes, IPM runs, tasked in previous WA and amendment that may need to be repeated.**

The WACOR will review all deliverables in draft form and provide revisions and/or comments as necessary to the contractor. The contractor shall prepare the final deliverables incorporating the WACOR's comments.

Task 1: Prepare Workplan

The contractor shall develop a work plan that describes how each task will be carried out. The work plan shall include a technical approach, resources, schedule, staffing plan, level of effort (LOE), and cost estimate for each task, the contractor's key assumptions on which staffing plan and budget are based, and qualifications of proposed staff. If a subcontractor(s) is proposed and subcontractors are outside the local metropolitan area, the contractor shall include information on plans to manage work and control costs. All P levels, hours and total dollars for each task will be provided and costs greater than $100.00 shall be itemized in detail. The contractor shall provide their job number with all invoices to facilitate their expediency.

Deliverable: Workplan - Per contract requirements

Task 2: Quality Assurance

Quality Assurance Project Plans are required under the Agency's Quality Assurance Policy CIO-2105, formerly EPA Order 5360.1 A2 and implementing guidance CIO-2105-P-01-0. All projects that involve the generation, collection, analysis, and use of environmental data must have an approved Quality Assurance Project Plan (QAPP) in place prior to the commencement of the work. Examples of these environmental data operations are provided in **Table 1-1** below.

Table 1-1. Examples of work that involves the collection, generation, evaluation, analysis, or use of environmental data

Item	Examples
Data	Includes field sampling information (sample location information, flow measurements, temperature, pH, physical observations, etc.), laboratory measurements (e.g., chemical, physical, biological, radiological measurements), data collected from questionnaires, economic data, census data, and any other types of existing data (i.e., data generated for a different purpose or generated by a different organization)
Data generation	Includes field studies, laboratory studies, and generation of modeling output
Data collection	Includes field surveys, questionnaire surveys, literature searches, and third party data
Data evaluation	Includes data inspection, review, assessment, and validation
Data analysis	Includes statistical, engineering, and economic analysis, and testing, evaluation, and validation of methods and models; database creation, data extraction, and data manipulation
Data Use	Any use of data to support EPA decisions, regulations, policy, publications, or tools (including effluent guidelines, 304(m) program, standards, environmental assessments, and models, tools, or reports disseminated by EPA to assist other organizations in implementing environmental programs)

Note that QAPPs are required for the development or revision of models and software that support the generation, collection, evaluation, analysis, or use of data. (A model is set of equations and assumptions used to predict unknown data.) When existing models are used as a tool to generate or evaluate data, the project QAPP must describe the model and explain how it will be used and how its output will be evaluated to ensure the modeling effort meets the overall quality objectives for the project. Development or revision of new models also must be supported by a QAPP that describes the objectives for the model, the quality criteria that will be applied to the model, and the procedures for evaluating whether the model meets those criteria.

2.1 QA Project Plan Requirements

Consistent with the Agency's quality assurance (QA) requirements, the contractor shall follow the Agency approved ICF March 2017 Programmatic Quality Assurance Project Plan (pQAPP) for Collection, Use, and Analysis (including Model Application) of Existing Data under EPA Contract EP-C-16-011 in order to assure the quality of the data used under this work assignment. The scope of the March 2017 pQAPP covers existing data review, existing peer reviewed model application, but does not anticipate data generation or acquisition.

The project specific quality assurance requirements must be identified on the attached table 1-2 and completed by ICF. Table 2-1 is to be specific to the ICF PQAPP, Programmatic Quality Assurance Project Plan for Collection, Use, and Analysis (including Model Application) of existing Data applicable for EPA contract: EP-C-16-011, and must identify the PQAPP section and page numbers. It is anticipated that the PQAPP will not fully address the specific project and task information required on the Table. In those instances, the contractor must indicate in the comment column the specific areas that require additional information and must develop a Supplemental QAPP(SQAPP) to address those elements and submit to EPA for review and approval.

The project specific quality assurance requirements must be addressed in the work pan and monthly progress reports as specified under Task 1. The completed Table 1-2 must be submitted with the work plan. The contractor shall discuss with the WACOR if they believe any of the specific work assignment tasks are not readily covered under the March 2017 pQAPP for existing data. Any additional quality assurance requirements must be addressed in the work plan and monthly progress reports and, if needed, be covered by a work assignment (WA)-specific QAPP supplement, which must be approved by the EPA WACOR in writing before activities covered by the additional QA language begin under this work assignment. A final QA statement detailing the Quality Assurance and Quality Control (QA/QC) procedures for compiled data and any summaries generated in this work assignment are required when all tasks are completed.

The activities in this work assignment involve gathering, evaluating, analyzing, and otherwise using existing environmental data (also known as "secondary" use of data). However, EPA has determined that the contractor is operating under the existing pQAPP which addresses QA requirements for this work assignment. In support of this work assignment, the contractor shall ensure that the work plan provides enough detail to clearly describe:

- Specific objectives of the project(s) supported by this work assignment, including typical questions that must be answered when using existing sources of data to perform economic analyses in support of the Steam Electric Industry Guidelines.
- The type of data to be gathered or used under this work assignment to support the project objectives—including data from search engines, Federal databases, EPA databases—as well as a rationale for when those databases are appropriate and what data available in each will support the project
- The quality objectives needed to ensure the data will support the project objectives, and
- The QA/QC activities to be performed to ensure that any results obtained are documented and are of the type, quality, transparency, and reproducibility needed.

Deliverable: Table 1-2 is attached at the end of this PWS, and is to be completed by the contractor and provided as an attachment to the work plan.

2.2 Additional QA Documentation Required

The EPA Quality Manual for Environmental Programs (CIO 2105-P-01-0, May 2000) requires published Agency reports containing environmental data to be accompanied by a readily identifiable section or appendix that discusses the quality of the data and any limitations on the use of the data with respect to their originally intended application. The EPA Quality Manual further requires Agency reports to be reviewed by the QA manager (or other authorized official) before publication to ensure that an adequate discussion of QA and QC activities is included. The purpose of the review is to ensure the reports provide enough information to enable a knowledgeable reader to determine if the technical and quality goals were met for the intended use of the data. Reports should include applicable statements regarding the use of any environmental data presented as a caution about possible misuse of the data for other purposes. For example, a Technical Support Document or Study Report must include a clear discussion of the quality management strategies (including the project goals and objectives, quality objectives and criteria, and QA/QC practices) that were employed to control and document the quality of data generated and used. These documents should also discuss any deviations from procedures documented in the EPA-approved QAPP(s) supporting the project, the reasons for those deviations, any impact of those deviations had on data quality, and steps taken to mitigate data quality issues.

In support of this Agency requirement, all major deliverables (e.g., Technical Support Documents, Study Reports) produced by the contractor under this work assignment must include a discussion of the QA/QC activities that were performed to support the deliverable, and this discussion must provide a sufficient level of detail to allow the EAD QA Coordinator (or designee) to determine if the QA/QC strategies implemented for the project sufficiently support the intended use of the data. Upon receipt, the WACOR will review each applicable report and certify whether the contractor has adhered to the QA requirements documented in the contractor's pQAPP.

The contractor shall also provide the WACOR with monthly reports of QA activities performed during implementation of this work assignment. These monthly QA reports shall identify QA activities performed to support implementation of this work assignment, problems encountered,

deviations from the QAPP, and corrective actions taken. If desired, the contractor may include this as a part of the contract-required monthly financial/technical progress report.

2.3 Data Quality Act/Information Quality Guidelines Requirements
The Data Quality Act (also known as the Information Quality Act) requires EPA to ensure that influential information disseminated by the Agency is sufficiently transparent in terms of data and methods of analysis that the information is capable of being substantially reproduced. To support compliance with these data transparency/ data reproducibility requirements, EPA plans to include QAPPs as part of any rulemaking record documentation to be made available to the public. (This includes pQAPPs and sQAPPs.) The contractor may claim information in QAPPs as confidential; if the contractor chooses to do so, the contractor shall submit a sanitized (i.e., public) version and an unsanitized (i.e., confidential) version at the time the QAPP is submitted for approval by EPA. The sanitized version shall be included in the public docket for the applicable rulemaking (or other docket record), and the unsanitized version shall be included in a non-public (i.e., confidential) portion of the docket (or record).

Information contained in the approved QAPP shall be transparent and reproducible and meet the requirements of the Data Quality Act for influential information. EPA's *Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity, of Information Disseminated by the Environmental Protection Agency* (EPA/260R-02-008, October 2002), referred to as "EPA's Information Quality Guidelines," describe EPA procedures for meeting Data Quality Act requirements. Section 6.3 of EPA's Information Quality Guidelines indicate that "especially rigorous robustness checks" should be applied in circumstances where quality-related information cannot be disclosed due to confidentiality issues. Where applicable, the contractor shall indicate which results were obtained using the tools (SOPs, checklists, and guidelines) that the contractor designates as confidential so the WACOR can easily identify the areas that shall require rigorous robustness checks and document that those checks have been performed. At the discretion of the WACOR, the contractor may be requested to prepare pre-dissemination review checklist as described in Section 5.5 of the Office of Water Quality Management Plan, February 2009. If this is required, the WACOR shall notify the contractor through written technical direction.

Deliverables:
Monthly reports of QA work performed (may be included in the contractor's monthly progress report)

Complete Table 1-2 and SQAPP recommendations.

Task 3: Prepare Standardized Naming Convention and Version Control Memorandum
The contractor shall prepare and submit a memorandum that proposes a standardized naming convention and version control (SNCVC) for all deliverables associated with the WA. This system will ensure that deliverables are clearly named and dated and that the sequence of versions of a document is clear. The WACOR will review the memorandum and then provide the contractor with written notification of approval or edits that need to be made. The contractor

shall prepare a revised SNCVC memorandum incorporating the WACOR's comments, if required. After receiving notification of approval the contractor shall use this standardized convention for all deliverables associated with the work assignment. The WACOR may direct the contractor through written technical direction to amend the SNCVC memorandum at any point during the WA.

Deliverables:
3a. SNCVC memorandum due within 7 calendar days of workplan approval.
3b. If required, revised memorandum due within 3 calendar days of receipt of written technical direction from the EPA WACOR.

Table 1-2. Justification for Use of Existing pQAPP as the Sole Quality Documentation for Projects that Rely on Existing Data

QAPP Element	Sufficiently Addressed in PQAPP	Not Applicable to Project	Explanatory Comments
A1. Title & Approval Sheet			
Project title	X		WA 4-05 Economic and Litigation support for the Steam Electric
Organization's name	X		Abt Associates
Effective date and/or version identifier	X		Page ii of PQAPP
Dated signature of Organization's project manager	X		Page ii of PQAPP
Dated signature of Organization's QA manager	X		Page ii of PQAPP
Other signatures, as needed (e.g., EAD Project Officer, EAD QA Coordinator)	X		Page ii of PQAPP
Revision History	X		Page ii of PQAPP
A2. Table of Contents			
Includes sections, figures, tables, references, and appendices	X		Page v of PQAPP
Document control information indicated (when required by the EPA Project Manager and QA Manager)	X		Page v of PQAPP
A3. Distribution List			
Includes all individuals who are to implement or otherwise receive the QAPP and identifies their organization	X		2.1 pages 5-7 of PQAPP
A4. Project/Task Organization			
Identifies key individuals with their responsibilities (e.g., data users, decision makers, project QA manager, Subcontractors, etc.) and contact info.	X		Reference PQAPP section 2.1 on page 5. Referencing table 2.1 and descriptions on page 7 of PQAPPOST WACOR: James C. Covington, III
Organization chart shows lines of authority & reporting responsibilities	X		Reference PQAPP section 2.1 for overall picture
Project QA manager position indicates independence from unit collecting/using data	X		Reference PQAPP section 2.1 for overall picture
A5. Problem Definition/Background			
Clearly states problem to be resolved, decision to be made, or hypothesis to be tested	X		PQAPP Section 2.2 – goal of program is to conduct economic analyses for ELGs See PQAPP table 2-2: cost-benefit and economic impact analysis, industry profiles, collection /preparation of reports, review and analysis of public comments, legislative and litigation support, database development and management, Also see WA
Identifies project objectives or goals	X		See WA
Historical & background information			
Cites applicable technical, regulatory, or program-specific quality standards, criteria, or objectives	X		Section 2.2 – goal of program is to conduct economic analyses for ELGs. See table 2-2 and above reference for specific analyses
A6. Project/Task Description			
List measurements to be made/data to obtain	X		Section 2.3 PQAPP
Notes special personnel or equipment requirements		x	
Provides work schedule		x	

QAPP Element	Sufficiently Addressed in PQAPP	Not Applicable to Project	Explanatory Comments
A7. Overall Quality Objectives & Criteria			
States overall quality objectives and limits needed to support the project goals and objectives cited in A5	X		See 2.3 of PQAPP
A8. Special Training Requirements/ Certifications			
Identifies specialized skills, training or certification requirements	X		See 2.5 of PQAPP
Discusses how this training will be provided/the necessary skills will be assured and documented	X		See 2.5 of PQAPP
A9. Project-level Documents & Records			
Describes process for distributing the approved QAPP and other planning documents (and updates) to staff	X		See section 2 of PQAPP
Identifies final work products that will result from the project	X		Section 2.6 of PQAPP
Describes the process for developing, reviewing, approving, and disseminating the final work products and individuals responsible for these processes	X		Appendix A of PQAPP
B1. Data Needs			
Detailed list/description of the specific data elements needed to support project goals	X		See Section 3 Existing Data of PQAPP
Description of the scope of the data elements that you need (e.g., data supporting specific treatment options vs. the full range of options, data supporting the entire country vs. a specific geographic region)	X		See Section 3 of PSAPP
If project includes development or update of a project database, QAPP identifies and defines each database field		x	
B2. Potential Data Sources			
Identifies and describes potential sources of the existing data needed (e.g., photographs, topographical maps, facility or state files, census data, meteorological data, publications, etc.) and the rationale for their use	X		See Table 3.1 of PQAPP
If literature searches are used, describes the search engines that will be used and key search terms	X		See Table 3.1 of PQAPP
If databases or models will be used, describe the database (or model) in terms of who developed it and operates it and the type of data it contains	X		See table 3.2 of PQAPP
For other potential sources, describe the potential sources & rationale for considering or using each one		x	

QAPP Element	Sufficiently Addressed in PQAPP	Not Applicable to Project	Explanatory Comments
B3. Criteria for Selecting Data Sources			
Identifies each criterion that will be used to determine if the candidate data sources listed in B2 will meet your needs, and how each criterion is defined. (Criteria vary by project; examples include reliability, age, applicability, quantity, format, and others)	X		PQAPP 3.1.3 Criteria for Selecting Data Sources
Explains rating system used to evaluate source against each criterion		x	
B4. Data Value Selection Approach			
For data sources that meet the criteria identified in B3: Describes the criteria and procedures that will be used to determine which value(s) identified in the acceptable sources are most appropriate for use in the project	X		Section 3.1.4 of PQAPP
For data that do not meet these pre-established criteria but are the only data available, explains how the decision to use such data will be made and documented		x	
B5. Resolving Data Gaps			
Describes the process for identifying and addressing data gaps that still exist after candidate data sources have been evaluated and appropriate data values have been identified	X		Section 3.1.5 of PQAPP
Describes the process that will be used to address any new data needs revealed during the data gathering process (i.e., additional data elements not previously considered)		x	
B6. Data Gathering Documentation and Records			
Describes how results of the source selection and the data value selection will be documented, including any sources or values that were rejected and the rationale for not using them	X		See Section 3.1.6
For data that are deemed acceptable and that will be used, explains how each data element will be associated to its original source citation (i.e., bibliographic information, telephone contact reports, email messages, etc.)	X		See Section 3.1.6
C1. Standardization of Data Elements			
Describes the process to ensure that units and other key measures are captured and standardized (or otherwise made comparable) in the database	X		See Section 3.2.1
If the project requires that all fields be standardized to a single set of units (e.g., US dollars for economic data, µg/L for chemical data), identifies the standard units that will be required for each data element	X		See Section 3.2.1

QAPP Element	Sufficiently Addressed in PQAPP	Not Applicable to Project	Explanatory Comments
Identifies the procedures for converting data reported in other units to the standardized units, including any rounding or truncating procedures, and procedures for ensuring these conversions are performed correctly	X		See Section 3.2.1
If standardization of data elements is not needed, explains the process for ensuring that data presented in varying units are comparable enough for use in the project and that project staff members and other data users will be able to readily identify differences in units	X		See Section 3.2.1
C2. Data Entry			
Explains the process for manually entering selected data into the project database, who will be responsible for such data entry, and the QC strategies that will be used to ensure that the database accurately and completely captures the data as presented in the original source	X		See Section 3.2.2
C3. Merging or Uploading Electronic Data from Existing Sources			
If data are available electronically and will be uploaded or merged into the project database: describes the procedures that will be followed to ensure that errors are not introduced during the upload/merge process and that the final database reflects the original dataset(s)	X		See Section 3.2.3
C4. Data Review			
Describes the process for ensuring that the data have been recorded, transmitted, and processed correctly	X		See Section 3.2.4
C5. Data Storage and Manipulation			
Describes how the existing data will be stored	X		See Section 3.2.5
Describes who will be responsible for access to and maintenance of the stored data	X		See Section 3.2.5
Describes how the existing data will be incorporated with other project data to support the project goal/decision to be made	X		See Section 3.2.5
Describes the QC strategies that will be employed to ensure that the integrity of the data is not compromised during data storage, access/retrieval, updates, or other manipulation	X		See Section 3.2.5
D1. Data Quality Verification and Data Quality Reporting			
Describes the process for verifying that the final set of data meets the overall criteria originally specified for the project	X		Section 3.3.1
Describes how these determinations will be documented and reported	X		Section 3.3.1

QAPP Element	Sufficiently Addressed in PQAPP	Not Applicable to Project	Explanatory Comments
For data that don't meet the pre-established specifications, explains the process for determining if they are usable and how such decisions will be documented	X		Section 3.3.1
D2. Use/Analysis of the Existing Data			
Provides details regarding the exact means in which the data will be used to meet project objectives	X		Section 3.3.2
Includes an explanation or list of the information to be calculated and the data elements that will be used to make those calculations	X		Section 3.3.2
Includes applicable calculations and equations (if known) or explanations of how they will be developed	X		Section 3.3.2
Includes plans for excluding outliers	X		Section 3.3.2
D3. Methodology Documentation and Conceptual Review			
If exact methodologies for analyzing the data will need to be developed or modified during the course of data analysis, explains the process by which such methodologies will be documented, who is responsible for reviewing/ approving their use, and how the methodologies will be checked to ensure they yield the desired products	X		Section 3.2.3
D4. Technical Review of the Data Analysis			
Describes activities that will be used to ensure the data analyses are being implemented as specified and will support project objectives	X		Section 3.3.4
Explains procedures for identifying and notifying appropriate personnel if changes to the originally planned procedures are warranted, and the process for approving, documenting and implementing such changes	X		Section 3.3.4
D5. Final Verification of Data Analysis and Reconciliation with User Requirements			
Describes the process for reviewing the final work product to ensure that the work was generated in accordance with the QAPP, and that the work product addresses the overall project goals and objectives	X		Section 3.3.5
Describes how the results of this assessment will be documented	X		Section 3.3.5
Describes how any limitations of the data or data analyses that were used to prepare the final work product will be documented and communicated	X		Section 3.3.5

Task 4: Draft-Revision to Economic and Regulatory Analysis Report (RIA)

As part of EPA's reconsideration of the 2015 steam electric rule, the contractor shall conduct analyses to support revisions to the regulatory options and compliance timeframe. These

analyses shall assess the private and societal benefits, costs as well as economic achievability throughout the economy.

The contractor shall be prepared to revise the IPM baseline to incorporate recent shut-downs and also to account for other economic changes. Economic analyses shall be performed in a manner prescribed by U.S. EPA "Guidelines for Preparing Economic Analyses" (2010) and OMB Circular A-4, "Regulatory Analysis".

The contractor shall use the Integrated Planning Model (IPM) to assess the economic impact of regulatory options for the Steam Electric rulemaking on the Electric industry. The contractor shall be prepared to perform runs to determine impacts of two regulatory options. The contractor shall also draft a revised RIA describing the revised analyses. Once the WACOR reviews the draft materials and provide revisions and comments to the contractor, the contractor shall prepare a final version of the material incorporating the WACOR's comments.

Deliverables:
The WACOR may ask for a revised RIA at any point. The deliverables under this task are due within 7 calendar days of receiving written technical direction from the EPA WACOR; The final date for material will be ongoing as directed by written technical direction, but no later than June 30, 2019.

Task 5: Draft-Revision to Cost Benefit Analysis Report (BCA)
The contractor shall evaluate information required for EPA assessments of the total cost of compliance that may be incurred by a community for regulatory options, as well as the cost that may be incurred by local, State, and Federal governments, and by society as a whole. Similarly, the contractor shall provide data required for the EPA's assessment of the benefits of the Steam Electric guideline options to society. These analyses may include environmental benefits, health benefits, environmental justice, recreational benefits, benefits of ecosystem services, environmental assessment and other ecological benefits.

Deliverables:
The WACOR may require a draft-version to be delivered at any point, through written technical direction. The deliverables under this task are due within 7 calendar days after receiving written technical direction from the EPAWACOR; The final date for material will be ongoing as directed by written technical direction, but no later than June 30, 2019.

Task-6 Draft- Revision Final Analysis and reports of Other Statutory/EO Requirements
The contractor shall provide support for the analyses required under statutes such as Unfunded Mandates Regulatory Act (UMRA) and the National Technology Transfer and Advancement Act (NTTAA), among others; Executive Orders (EOs) such as Federalism, Protection of Children's Health, Consultation and Coordination with Indian Tribal Governments; Environmental Justice; and Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use; among others. The contractor shall also provide support for the Administrator's priorities. The EPA shall make all decisions related to the applicability of these statutes and EOs to its

actions.

Deliverables:
The WACOR may require a draft-version to be delivered at any point, through written technical direction. The deliverables under this task are due within 7 calendar days after receiving written technical direction from the EPAWACOR; The final date for material will be ongoing as directed by written technical direction, but no later than June 30, 2019.

At least 1 draft memo and analysis will be due 7 calendar days after receiving written technical direction from the EPA WACOR, but no later than June 30, 2019.

General Requirements of the Work Assignment and Schedule

Confidential Business Information: During the course of the work assignment, the contractor shall be accessing and evaluating CBI. As such, the contractor shall adhere to EPA's CBI policy and procedures as described in the contract clauses (Clauses H.15-H19 and H.21). The contractor shall maintain CBI security clearance to use CBI information. The contractor shall not disclose any CBI to anyone other than EPA without prior written approval from the WACOR. The contractor shall, at all times, adhere to Confidential Business Information (CBI) procedures when handling industry information. The contractor shall manage all reports, documents, and other materials and all draft documents developed under this work assignment in accordance with the procedures set forth in our "Office of Science and Technology Confidential Business Information Application Security Plan" (August 2011) or its successor approved plans.

Budget Reporting: The contractor shall report to the WACOR, Contract-Level COR, and Contracting Officer (CO) in writing when 80 percent of the total budget for this work assignment has been depleted.

Identification as Contracting Staff: To avoid the perception that contractor personnel are EPA employees, the contractor personnel shall be clearly identified as independent contractors of EPA when participating in events with outside parties and prior to the start of any meeting. The contractor personnel are prohibited from acting as the Agency's official representative. When speaking with the public, the contractor shall refer all interpretations of policy to the WACOR.

Limitation of Contractor Activities: The contractor shall submit drafts of all deliverables to the WACOR for review prior to submission of the final product. These drafts will clearly specify the methods, procedures, considerations, assumptions, relevant citations, data sources and data that support any conclusions and recommendations. The contractor shall incorporate all EPA comments into all final deliverables, unless otherwise agreed upon by the WACOR. The contractor shall adhere to all applicable EPA management control procedures as implemented by the EPA Contracting Officer (CO), Contract-Level COR, and WACOR.

Quick Response: Under this Performance Work Statement (PWS), the contractor may be required to provide information for use by EPA for quick responses and analyses of options,

issues, and policy decisions. Quick responses are those which require completion in one to five working days. Should the need arise, the EPA WACOR will issue the request in written technical direction.

Travel: For the purpose of preparing a work plan, the contractor shall anticipate 2 in person meeting with EPA. Local travel is anticipated, no contractor travel outside of the Washington, DC metro area is required.

Deliverable Formatting: All memos, draft comments, summaries and responses, and chapters are to be provided in electronic form using Word and/or Excel/Access, ArcView, or, in special cases another software program agreed to by the WACOR. Memos shall be written in a manner which will make them easy to conform into draft chapters for the Final Report. For deliverables that are in Word or pdf versions of Word documents, that are intended to be shared with management or the public, the contractor shall use decimal align in all tables containing columns of numbers of varying digits, whether decimal places are reported or not. All final materials, e.g., memos, chapters, etc. are to be prepared only after receiving written technical direction from the WACOR and formatted to be in compliance with Section 508 Amendment to the Rehabilitation Act of 1973.

Deliverables	**Schedule**
Task 1: Prepare Workplan	Per contract requirements
Task 2: QA Deliverables	Due Monthly
2.1 QA Project Plan Complete Table 1-2	Due with work plan submittal
2.2 Monthly reports of QA work performed	Included in the monthly progress report
2.3 Complete Table 1-2 & SQAPP recommendations	Due with work plan submittal
Task 3:	
3a. Prepare SNCVC memorandum	Due within 7 calendar days of workplan approval
3b. Revised memorandum	Due within 3 calendar days of receiving written technical direction from EPA WACOR
Task 4: **Draft-Revision to Economic and RIA**	Due within 7 calendar days of receiving written technical direction from EPA WACOR
The final date for material	Due no later than June 30, 2019
Task 5: **Draft-Revision to Cost Benefit Report**	Due within 7 calendar days of receiving written technical direction from EPA WACOR
The final date for material	Due no later than June 30, 2019
Task 6: **Draft- Revision Final Analysis**	Due within 7 calendar days of receiving written technical direction from EPA WACOR

and Reports of Other Statutory and EOs	
At least 1 draft memo and analysis	Due 7 calendar days after receipt of written technical direction from EPA WACOR.
The final date for any draft-revision benefit analysis	Due no later than June 30, 2019

Table 1-2. QAPP Elements that Require Additional Explanation in a Supplemental QAPP for Existing Data Projects

QAPP Element	Sufficiently Addressed in PQAPP or Not Applicable to Project	Additional Detail Needed in SQAPP	Explanatory Comments Regarding Additional Detail Needed
A1. Title & Approval Sheet			
Project title			
Organization's name			
Effective date and/or version identifier			
Dated signature of Organization's project manager			
Dated signature of Organization's QA manager			
Other signatures, as needed (e.g., EAD Project Officer, EAD QA Coordinator)			
Revision History			
A2. Table of Contents			
Includes sections, figures, tables, references, and appendices			
Document control information indicated (when required by the EPA Project Manager and QA Manager)			
A3. Distribution List			
Includes all individuals who are to implement or otherwise receive the QAPP and identifies their organization			
A4. Project/Task Organization			
Identifies key individuals with their responsibilities (e.g., data users, decision makers, project QA manager, Subcontractors, etc.) and contact info.			
Organization chart shows lines of authority & reporting responsibilities			
Project QA manager position indicates independence from unit collecting/using data			
A5. Problem Definition/Background			
Clearly states problem to be resolved, decision to be made, or hypothesis to be tested			
Identifies project objectives or goals			
Historical & background information			
Cites applicable technical, regulatory, or program-specific quality standards, criteria, or objectives			
A6. Project/Task Description			
List measurements to be made/data to obtain			
Notes special personnel or equipment requirements			
Provides work schedule			

QAPP Element	Sufficiently Addressed in PQAPP or Not Applicable to Project	Additional Detail Needed in SQAPP	Explanatory Comments Regarding Additional Detail Needed
A7. Overall Quality Objectives & Criteria			
States overall quality objectives and limits needed to support the project goals and objectives cited in A5			
A8. Special Training Requirements/ Certifications			
Identifies specialized skills, training or certification requirements			
Discusses how this training will be provided/the necessary skills will be assured and documented			
A9. Project-level Documents & Records			
Describes process for distributing the approved QAPP and other planning documents (and updates) to staff			
Identifies final work products that will result from the project			
Describes the process for developing, reviewing, approving, and disseminating the final work products and individuals responsible for these processes			
B1. Data Needs			
Detailed list/description of the specific data elements needed to support project goals			
Description of the scope of the data elements that you need (e.g., data supporting specific treatment options vs. the full range of options, data supporting the entire country vs. a specific geographic region)			
If project includes development or update of a project database, QAPP identifies and defines each database field			
B2. Potential Data Sources			
Identifies and describes potential sources of the existing data needed (e.g., photographs, topographical maps, facility or state files, census data, meteorological data, publications, etc.) and the rationale for their use			
If literature searches are used, describes the search engines that will be used and key search terms			
If databases or models will be used, describe the database (or model) in terms of who developed it and operates it and the type of data it contains			
For other potential sources, describe the potential sources & rationale for considering or using each one			
B3. Criteria for Selecting Data Sources			
Identifies each criterion that will be used to determine if the candidate data sources listed in B2 will meet your needs, and how each criterion is defined. (Criteria vary by project; examples include reliability, age, applicability, quantity, format, and others)			
Explains rating system used to evaluate source against each criterion			
B4. Data Value Selection Approach			
For data sources that meet the criteria identified in B3: Describes the criteria and procedures that will be used to determine which value(s) identified in the acceptable sources are most appropriate for use in the project			
For data that do not meet these pre-established criteria but are the only data available, explains how the decision to use such data will be made and documented			

QAPP Element	Sufficiently Addressed in PQAPP or Not Applicable to Project	Additional Detail Needed in SQAPP	Explanatory Comments Regarding Additional Detail Needed
B5. Resolving Data Gaps			
Describes the process for identifying and addressing data gaps that still exist after candidate data sources have been evaluated and appropriate data values have been identified			
Describes the process that will be used to address any new data needs revealed during the data gathering process (i.e., additional data elements not previously considered)			
B6. Data Gathering Documentation and Records			
Describes how results of the source selection and the data value selection will be documented, including any sources or values that were rejected and the rationale for not using them			
For data that are deemed acceptable and that will be used, explains how each data element will be associated to its original source citation (i.e., bibliographic information, telephone contact reports, email messages, etc.)			
C1. Standardization of Data Elements			
Describes the process to ensure that units and other key measures are captured and standardized (or otherwise made comparable) in the database			
If the project requires that all fields be standardized to a single set of units (e.g., US dollars for economic data, µg/L for chemical data), identifies the standard units that will be required for each data element			
Identifies the procedures for converting data reported in other units to the standardized units, including any rounding or truncating procedures, and procedures for ensuring these conversions are performed correctly			
If standardization of data elements is not needed, explains the process for ensuring that data presented in varying units are comparable enough for use in the project and that project staff members and other data users will be able to readily identify differences in units			
C2. Data Entry			
Explains the process for manually entering selected data into the project database, who will be responsible for such data entry, and the QC strategies that will be used to ensure that the database accurately and completely captures the data as presented in the original source			
C3. Merging or Uploading Electronic Data from Existing Sources			
If data are available electronically and will be uploaded or merged into the project database: describes the procedures that will be followed to ensure that errors are not introduced during the upload/merge process and that the final database reflects the original dataset(s)			
C4. Data Review			
Describes the process for ensuring that the data have been recorded, transmitted, and processed correctly			
C5. Data Storage and Manipulation			
Describes how the existing data will be stored			
Describes who will be responsible for access to and maintenance of the stored data			

QAPP Element	Sufficiently Addressed in PQAPP or Not Applicable to Project	Additional Detail Needed in SQAPP	Explanatory Comments Regarding Additional Detail Needed
Describes how the existing data will be incorporated with other project data to support the project goal/decision to be made			
Describes the QC strategies that will be employed to ensure that the integrity of the data is not compromised during data storage, access/retrieval, updates, or other manipulation			
D1. Data Quality Verification and Data Quality Reporting			
Describes the process for verifying that the final set of data meets the overall criteria originally specified for the project			
Describes how these determinations will be documented and reported			
For data that don't meet the pre-established specifications, explains the process for determining if they are usable and how such decisions will be documented			
D2. Use/Analysis of the Existing Data			
Provides details regarding the exact means in which the data will be used to meet project objectives			
Includes an explanation or list of the information to be calculated and the data elements that will be used to make those calculations			
Includes applicable calculations and equations (if known) or explanations of how they will be developed			
Includes plans for excluding outliers			
D3. Methodology Documentation and Conceptual Review			
If exact methodologies for analyzing the data will need to be developed or modified during the course of data analysis, explains the process by which such methodologies will be documented, who is responsible for reviewing/ approving their use, and how the methodologies will be checked to ensure they yield the desired products			
D4. Technical Review of the Data Analysis			
Describes activities that will be used to ensure the data analyses are being implemented as specified and will support project objectives			
Explains procedures for identifying and notifying appropriate personnel if changes to the originally planned procedures are warranted, and the process for approving, documenting and implementing such changes			
D5. Final Verification of Data Analysis and Reconciliation with User Requirements			
Describes the process for reviewing the final work product to ensure that the work was generated in accordance with the QAPP, and that the work product addresses the overall project goals and objectives			
Describes how the results of this assessment will be documented			
Describes how any limitations of the data or data analyses that were used to prepare the final work product will be documented and communicated			

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-12

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-16-011	11/01/2016 To 06/30/2019 Base Option Period Number 2	Preliminary Economic Analysis

Contractor	Specify Section and paragraph of Contract SOW
ICF Incorporated, L.L.C.	3.1

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 07/01/2018 To 06/30/2019

Comments:

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

SFO (*Max 2*): ☐

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

Contract Period:	Cost/Fee:	LOE:
11/01/2016 To 06/30/2019		0
This Action:		1,650
Total:		1,650

Work Plan / Cost Estimate Approvals

Contractor WP Dated:	Cost/Fee	LOE:
Cumulative Approved:	Cost/Fee	LOE:

Work Assignment Manager Name: Austin Heinrich (Signature) (Date)	Branch/Mail Code: Phone Number: 202-564-6723 FAX Number:
Project Officer Name: Shirley Harrison (Signature) (Date)	Branch/Mail Code: Phone Number: 202-566-1107 FAX Number:
Other Agency Official Name: Shirley Harrison (Signature) (Date)	Branch/Mail Code: Phone Number: 202-566-1107 FAX Number:
Contracting Official Name: Sandra Stargardt-Licis (Signature) (Date)	Branch/Mail Code: Phone Number: 513-487-2006 FAX Number:

PERFORMANCE WORK STATEMENT
ICF CONTRACT EP-C-16-011
WORK ASSIGNMENT #2-12

Title: Preliminary Economic Analysis and Modeling Support: Per-and Polyfluoroalkyl Substances (PFAS)

Work Assignment Contracting Officer Representative (WACOR):
Austin Heinrich
U.S. Environmental Protection Agency (U.S. EPA)
Office of Water, Office of Ground Water and Drinking Water
Standards and Risk Management Division (Mail Code: 4607M)
Heinrich.austin@Epa.gov
Phone: 202-564-6723

Alternate Work Assignment Contracting Officer Representative (Alt WACOR):
Hannah Holsinger
U.S. Environmental Protection Agency (U.S. EPA)
Office of Water, Office of Ground Water and Drinking Water
Standards and Risk Management Division (Mail Code: 4607M)
Holsinger.hannah@Epa.gov
Phone: 202-564-0403

Contract PWS: Section 3.1

Estimated Level of Effort: 1,650 Hours

Period of Performance: Date of Issuance through June 30, 2019

Background and Purpose:
Per- and polyfluoroalkyl substances (PFAS) are a group of man-made chemicals that includes PFOA, PFOS, GenX, and many other chemicals. PFAS have been manufactured and used in a variety of industries around the globe, including in the United States since the 1940s. PFOA and PFOS have been the most extensively produced and studied of these chemicals. Both chemicals are very persistent in the environment and in the human body – meaning they do not break down and they can accumulate over time. There is evidence that exposure to PFAS at certain levels can lead to adverse human health effects. In 2016, U.S. EPA established non-enforceable health advisories for PFOA and PFOS based on assessment of peer-reviewed science to provide Americans (including sensitive subpopulations) with a margin of protection from a lifetime of exposure to PFOA and PFOS in drinking water (see https://www.epa.gov/ground-water-and-drinking-water/drinking-water-health-advisories-pfoa-and-pfos).

EPA is considering different PFAS risk-mitigation approaches, including the development of guidance and regulatory actions. As part of any potential future rulemaking process, the Safe Drinking Water Act requires U.S. EPA to prepare a health risk reduction and cost analysis (see

https://www.epa.gov/dwregdev/economic-analysis-and-statutory-requirements). In these assessments, quantitative and qualitative benefits of a proposed rule are measured against its cost.

Under this work assignment, the contractor shall develop a preliminary economic analysis, and as appropriate, other related preliminary rule analyses to be used to inform U.S. EPA about potential effects of selected regulatory scenarios. This analysis would be used as the foundation for any future health risk reduction and cost analysis should U.S. EPA ultimately evaluate whether to initiate rulemaking for any PFAS: any such framework should be mindful of statutory obligations found in 300g-1(b)(3)(c) of the Safe Drinking Water Act (SDWA), including "quantifiable and nonquantifiable health risk reduction benefits for which there is a factual basis in the rulemaking record to conclude that such benefits are likely to occur from reductions in co-occurring contaminants that may be attributed solely to compliance with the maximum contaminant level" (See 300g-1(b)(3)(c)(II)). The contractor shall complete the analysis in multiple steps, as explained in the work assignment tasks herein. A summary report comparing the potential effects of multiple PFAS regulatory scenarios will be the final product delivered under the work assignment. Additionally, the contractor shall deliver all supporting files and related information prior to the conclusion of the option period. The contractor shall consider, with input from the WACOR, U.S. EPA's guidelines for preparing economic analyses (see https://www.epa.gov/environmental-economics/guidelines-preparing-economic-analyses) throughout the development of all products produced under this work assignment.

General Requirements of the Performance Work Statement and Schedule:

Confidential Business Information (CBI): During the course of the work assignment, the contractor shall be accessing and evaluating CBI. As such, the contractor shall adhere to U.S. EPA's CBI policy and procedures as described in the Section H contract clauses. The contractor must maintain CBI security clearance to use CBI information. The contractor shall not disclose any CBI to anyone other than applicable U.S. EPA personnel without prior written approval from the WACOR. The contractor shall, at all times, adhere to Confidential Business Information (CBI) procedures when handling industry information. The contractor shall manage all reports, documents, and other materials and all draft documents developed under this work assignment in accordance with the procedures set forth in the Section H contract clauses.

Budget Reporting: The contractor, under this work assignment, is required to report to the WACOR when 80 percent of the total work assignment funding amount has been depleted. The contractor must also report to the WACOR when 80 percent of the approved Workplan budget has been depleted. The contractor must report, at a monthly minimum, the hours of labor and dollars expended under this Performance Work Statement. The labor hours and dollars must be broken down by task.

Identification as Contracting Staff: To avoid the perception that contractor personnel are U.S. EPA employees, contractor personnel shall be clearly identified as independent contractors of U.S. EPA when participating in events with outside parties and prior to the start of any meeting. The contractor personnel are prohibited from acting as the Agency's official representative.

When speaking with the public, the contractor shall refer all interpretations of policy to the WACOR.

Limitation of Contractor Activities: The contractor shall submit drafts of all deliverables to the WACOR for review prior to submission of the final product. These drafts will clearly specify the methods, procedures, considerations, assumptions, relevant citations, data sources and data that support any conclusions and recommendations. The contractor shall incorporate all WACOR comments into all final deliverables, unless otherwise agreed upon by the WACOR. The contractor shall adhere to all applicable U.S. EPA management control procedures as implemented by the Contracting Officer (CO), Contract-Level COR (CL-COR), and the WACOR.

Quick Response: Under this work assignment, the contractor may be required to provide information for use by U.S. EPA for quick responses and analyses of options, issues, and policy decisions. Quick responses are those which require completion in one to five working days.

Deliverable Formatting: The contractor shall develop and deliver all documents and/or deliverables in Microsoft Office and/or Adobe Acrobat compatible PDF format unless noted otherwise. All draft versions shall be labeled as "internal deliberative, do not cite, quote or distribute." For deliverable documents that are intended to be shared with management or the public (as specified by the WACOR through written technical direction), the contractor shall provide the document in a Section 508 format in accordance with the policies referenced at http://www.epa.gov/accessibility/. All final materials, e.g., memos, chapters, etc. are to be prepared only after receiving written technical direction from the WACOR. Deliverable deadlines shall be provided in technical direction, after evaluating time needed for efforts in consultation with the contractor. All products shall be original work or use appropriate citation cite to original sources.

Tasks:

The WACOR will review all deliverables in draft form and provide revisions and/or comments to the contractor. The contractor shall prepare the final deliverables incorporating the WACOR's comments.

Task 1 - Prepare Workplan and Monthly Progress Reports

The contractor shall prepare a workplan within 20 calendar days after receipt of performance work statement. The workplan shall outline, describe, and include the technical approach, resources, timeline and due dates for deliverables, a detailed cost estimate by task, and a staffing plan. The workplan shall include the requirement that all electronic and information technology (EIT) and all EIT deliverables be Section 508 compliant in accordance with the policies referenced at http://www.epa.gov/accessibility/.

The WACOR will review the workplan, however, only the CO can approve/disapprove, the workplan. Official revisions will be given to the contractor by the Contracting Officer. The contractor shall prepare a revised workplan incorporating the Contracting Officer's comments, if

required.

A weekly update call with the WACOR will be required for this work assignment to discuss progress on deliverables, costs, and other potential issues. This task also includes written monthly progress and financial reports. The Monthly Progress Report shall indicate, in a separate QA section, whether significant QA issues have been identified and how they are being resolved. Monthly reports must include a table with the invoice LOE and costs broken out by the tasks in this PWS.

Deliverables:

- Workplan is due within 20 calendar days after receipt of work assignment
- Monthly progress reports

For the purposes of the cost estimate, the WACOR estimates that Task 1 will require approximately 5% of the total technical LOE.

Task 2 – Quality Assurance

U.S. EPA policy requires that an approved Quality Assurance Project Plan be in place before commencing any work that involves the collection, generation, evaluation, analysis or use of environmental data. Tasks 3 through 6 in this work assignment require the use of primary and/or secondary data. Under task 2, the contractor shall develop a Supplemental Quality Assurance Project Plan (SQAPP), consistent with the Agency's Quality Assurance (QA) requirements, appending the Contract Level Quality Assurance Project Plan (QAPP). The project-specific QA requirements must be detailed in the monthly progress reports as specified under Task 1, above.

The contractor shall immediately notify the WACOR if any changes to the tasks involving the collection and analysis of the data occur and prepare a new SQAPP supplementing the Contract Level QAPP accordingly. Work on these tasks cannot proceed until the contractor receives notification of the new SQAPP approval from the WACOR and QA official via e-mail.

Deliverables:

- SQAPP to be written consistently with the contract level QAPP as well as specific to how quality assurance will be handled under this work assignment
- Through written technical direction, the contractor shall revise the SQAPP within 7 days of receipt of WACOR comments
- QA tracking required in monthly progress reports in accordance with Task 1

For the purposes of the cost estimate, the WACOR estimates that Task 2 will require approximately 5% of the total technical LOE.

Task 3 – Scoping and Literature Review

The contractor shall review information related to PFAS health effects, and occurrence for the purposes of using this information for economic analysis. This information will be used and described in the summary report, which will be developed under task 6. This task will involve the review of information used to develop the U.S. EPA drinking water health advisories for

PFOA and PFOS, as well as the collection and review of additional sources that have become available since the development of the health advisories. Prior to commencing the literature review, the contractor, led by the WACOR, shall consult with U.S. EPA health experts (from OST, ORD, etc.) who can provide them with the most recent information known by the Agency. Literature sources shall be explored by considering their possible usefulness in an economic analysis. The contractor shall consider dose-response and other toxicological and epidemiological information through consultation with the WACOR and U.S. EPA subject matter experts, when appropriate.

Types of support may encompass several areas, including:

- Evaluation of potential health effects (and weight of evidence of those effects) through review of both epidemiological and toxicological information
- Identification of possible data sources on PFAS occurrence that could be used to inform the economic analysis
- Detailed review of primary literature sources included in U.S. EPA's health advisory documents
- Review of U.S. EPA's health advisory documents on PFOA and PFOS to identify possible health endpoints to consider in the economic analysis
- Review of peer-reviewed literature not included in U.S. EPA's health advisory documents
- Use of various review tools to search and categorize literature
- Identification of which health outcomes (from oral ingestion of drinking water containing PFAS) can be monetized
- Selection of health outcomes (based on weight of evidence and other factors) for consideration in benefits monetization
- Development of summaries for the most important literature and data sources
- Identification of data gaps and limitations

The specific scope of review and analyses related to this information will be provided through written technical direction from the EPA WACOR. Deliverables shall be sent in Microsoft Word, Excel, Access and/or PowerPoint format as directed by the WACOR. Final documents and reports shall be delivered in both Microsoft Word and PDF (508-compliant for materials to be released publicly) formats.

Deliverables:

- Compiled literature database
- Draft documents and reports

For the purposes of the cost estimate, the WACOR estimates that Task 3 will require approximately 20% of the total technical LOE.

Task 4 – Baseline

The baseline of an economic analysis is a reference point that reflects the world without the proposed regulation. It is the starting point for conducting an economic analysis of the potential effects of a proposed regulation. Under this task (and after consulting with Agency PFAS

occurrence experts), the contractor shall characterize the current conditions with respect to the occurrence of PFOA, PFOS, and other relevant PFASs as the starting point for understanding the impact that potential regulatory development may have. This information will be used and described in the summary economic analysis report, which will be developed under task 6.

Types of support may encompass several areas, including:

- Analysis of National Contaminant Occurrence Database (NCOD) data, specifically PFOA/PFOS monitoring information collected under U.S. EPA's UCMR3 program
- Evaluation of other data sources identified under Task 3
- Spatial/temporal PFAS characterizations and consideration on effects in environmental justice groups and sensitive subpopulations
- Compilation of a water system industry profile (using key data sources including the safe drinking water information system and state datasets) to establish total population affected from PFAS in drinking water
- Estimates on number of systems and population served by those systems that have finished water PFAS concentrations exceeding U.S. EPA's health advisory levels (or other levels, where applicable)
- Development of summaries detailing analyses
- Identification of data gaps, uncertainty, limitations and assumptions

The specific scope of review and analyses related to this information will be provided through written technical directions from the WACOR. Deliverables shall be sent in Microsoft Word, Excel, Access and/or PowerPoint format as directed by the WACOR. Final documents and reports shall be delivered in both Microsoft Word and PDF (508-compliant for materials to be released publicly) formats.

Deliverables:

- Draft analytical results
- Final analytical results
- Draft documents and reports

For the purposes of the cost estimate, the WACOR estimates that Task 4 will require approximately 20% of the total technical LOE.

Task 5 – Risk Estimation

This task is comprised of two parts: 1. The development of concentration-response functions for key health effects, and 2. The estimation of baseline prevalence of these health effects in the US population. This information will be used and described in the summary economic analysis report, which will be developed under task 6.

Part 1.

Based on the results of Task 1, the contractor shall review the literature database and recommend which health effects should be focused on for quantitative analysis. These studies may be used to develop concentration-response functions or other metrics of health impacts (collectively referred to here as "risk estimate") for each selected health effect. The process to develop risk

estimates using the identified study data could proceed in different ways depending on the available data, the quality of the data in each study, and the health effect. The contractor shall consider dose-response and other toxicological and epidemiological information through consultation with the WACOR and U.S. EPA subject matter experts, when appropriate.

Part 2.
In addition to developing concentration-response or other measures of effect, the contractor may be asked to determine the baseline incidence of the selected health effects in the US population, as well as prevalence in sensitive subpopulations. These measures may provide a baseline prevalence of these effects in the US populations, which will be the basis for comparing the estimated incremental incidences of cancer and other diseases associated with exposure to PFAS. The contractor shall take the risk estimates (e.g., concentration-response functions, points of departure, or cancer slope values) from Part 1 and apply appropriate uncertainty factors to establish the hazard value to use in the benefit analysis. These uncertainty factors could include inter-species, intra-species, database, or population-specific uncertainty factors to produce reference-dose or population-adjusted dose values.

Types of support under both parts of this task may encompass several areas, including:

- Quantifying odds ratios and/or population attributable risk associated with various levels of PFAS in drinking water
- Developing a point of departure associated with a given health effect, such as no-observed effect levels or benchmark doses
- Combining raw data from multiple sources to develop a meta-analysis measure of hazards
- Using a physiologically based pharmacokinetic (PBPK) model to translate PFAS drinking water concentrations leading to an effect in animals to the water concentration leading to the same effect (as measured by the serum or urine concentrations) in humans
- Evaluation of multiple data sources (e.g., from the Centers for Disease Control and Prevention, National Institute of Health) to determine baseline disease in US population
- Comparison of exposure estimates with the reference or population-adjusted dose
- Development of summaries
- Identification of data gaps, uncertainty, limitations and assumptions

The specific scope of review and analyses related to this information will be provided through written technical directions from the WACOR. Deliverables shall be sent in Microsoft Word, Excel, Access and/or PowerPoint format as directed by the WACOR. Final documents and reports shall be delivered in both Microsoft Word and PDF (508-compliant for materials to be released publicly) formats, as directed by the WACOR.

<u>Deliverables:</u>

- Draft analytical results
- Final analytical results
- Draft documents and reports

For the purposes of the cost estimate, the WACOR estimates that Task 5 will require

approximately 30% of the total technical LOE.

Task 6 – Summary Report (Economic Analysis)
The contractor shall use the information developed under tasks 3-5 to compile a summary report. This report will effectively present background PFAS information and problem statements, key data sources, and baseline PFAS conditions. Additionally, the report will present the PFAS health effects considered for benefits estimates, different regulatory scenarios intended to prevent those effects, and finally the estimated benefits from reductions in PFAS drinking water exposure. The report shall also highlight other potential benefits that could be considered for future analyses, but which were not quantified for this report because of time and resource limitations.

Under this task (and within the report), the contractor shall monetize risk to estimate benefits from reductions in PFAS drinking water exposure. Through written technical direction from the EPA WACOR, the contractor may also consider treatment, operation and/or monitoring cost information for the purposes of developing a benefit-cost ratio. To the extent feasible, the contractor shall monetize benefits from reductions in both morbidity and mortality, for those health endpoints with sufficient information to do so. The contractor shall rely on U.S. EPA's estimate of the value of statistical life saved (VSL) for all mortality endpoints. To value morbidity effects the contractor shall rely on available cost of illness (COI) estimates (or ranges of COI estimates based on similar endpoints). The contractor will not be tasked to develop COI estimates; however, the contractor shall use COI estimates from peer-reviewed sources. The contractor shall develop a qualitative discussion on benefits for those endpoints where sufficient information is lacking.

The contractor shall also evaluate and present benefits that are unrelated from exposure to drinking water PFAS, such as risk aversion behaviors (e.g., benefits from an avoidance of expensive consumer behaviors aimed at avoiding exposure, such as the purchase of bottled water) and auxiliary benefits that could arise from reductions in other drinking water contaminants because of PFAS treatment in water systems.

Types of support may encompass several areas, including:

- Production of a final report, showing analysis process and an overall assessment of economic effects
- Development and presentation of different regulatory scenarios
- A broken-down assessment of benefits (and as directed by the WACOR, costs), showing estimates across different types of water systems, geographic areas, and population groups
- Discounting benefits (and as directed by the WACOR through written technical direction, costs) from several regulatory scenarios over a specified timeframe
- Presentation of data gaps, uncertainty, limitations and assumptions

The specific scope of review and analyses related to this information will be provided through written technical directions from the WACOR. Deliverables shall be sent in Microsoft Word, Excel, Access and/or PowerPoint format as directed by the WACOR. Final documents and

reports shall be delivered in both Microsoft Word and PDF (508-compliant for materials to be released publicly) formats.

Deliverables:

- Draft analytical results
- Final analytical results
- Draft documents and reports
- Final documents and reports

For the purposes of the cost estimate, the WACOR estimates that Task 6 will require approximately 20% of the total technical LOE.

Milestones and deliverables[1]

Milestone	Due Date
Task 1: Work plan, monthly progress reports and quality assurance	
Workplan	*Within 20 calendar days after receipt of work assignment*
Task 2: Quality Assurance	
SQAPP - written to be consistent with the contract level QAPP as well as specific to how quality assurance will be handled under this work assignment	*Within 20 calendar days after receipt of work assignment*
SQAPP revisions	*Within 7 days of receipt of comments from the WACOR, unless otherwise stated through written technical direction by the EPA WACOR*
QA tracking required in monthly progress reports, see Task 1 for due date	*On a monthly basis in accordance with Task 1*
Task 3: Scoping and Literature Review	
Compiled literature database	*Due no later than September 1, 2018*
Draft documents and reports	*Due no later than September 1, 2018*
Task 4: Baseline	
Draft analytical results	*Due no later than October 1, 2018*
Final analytical results	*Due no later than June 1, 2019*

Draft documents and reports	*Due no later than October 1, 2018*
Task 5 – Risk Estimation	
Draft analytical results	*Due no later than November 1, 2018*
Final analytical results	*Due no later than June 1, 2019*
Draft documents and reports	*Due no later than November 1, 2018*
Task 6 – Summary Report (Economic Analysis)	
Draft analytical results	*Due no later than December 15, 2018*
Final analytical results	*Due no later than June 1, 2019*
Draft documents and reports	*Due no later than December 15, 2019*
Final documents and reports	*Due no later than June 1, 2019*

[1] Schedules may be modified if mutually agreed to by the WACOR and contractor.

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-12

☐ Other ☒ Amendment Number: 000001

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-16-011	11/01/2016 To 06/30/2020 Base Option Period Number 2	Analysis/Modeling support PFAS

Contractor	Specify Section and paragraph of Contract SOW
ICF Incorporated, L.L.C.	3.1

Purpose:
- ☐ Work Assignment
- ☒ Work Assignment Amendment
- ☐ Work Plan Approval
- ☐ Work Assignment Close-Out
- ☐ Incremental Funding

Period of Performance: From 07/01/2018 To 06/30/2019

Comments:
Amendment 1 to reflect a total of 1790 LOE (Original WPA 1650 LOE + Amendment 1 to add 140 LOE at no additional cost).

☐ Superfund — Accounting and Appropriations Data — ☒ Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (*Max 2*) ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

	Cost/Fee:	LOE:
Contract Period: 11/01/2016 To 06/30/2020		1,650
This Action:		0
Total:		1,650

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE:
Contractor WP Dated:		
Cumulative Approved:		

Work Assignment Manager Name: Austin Heinrich (Signature) (Date)	Branch/Mail Code:	
	Phone Number:	202-564-6723
	FAX Number:	
Project Officer Name: Shirley Harrison (Signature) (Date)	Branch/Mail Code:	
	Phone Number:	202-566-1107
	FAX Number:	
Other Agency Official Name (Signature) (Date)	Branch/Mail Code:	
	Phone Number:	
	FAX Number:	
Contracting Official Name: Kathleen Rechenberg (Signature) (Date)	Branch/Mail Code:	
	Phone Number:	513-487-2853
	FAX Number:	

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-14

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-16-011	11/01/2016 To 06/30/2019 Base Option Period Number 2	Support for OPPTs Chemical Pri

Contractor	Specify Section and paragraph of Contract SOW
ICF Incorporated, L.L.C.	1.0, 2.0,3.0,4.0

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 11/01/2018 To 06/30/2019

Comments:

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

SFO (*Max 2*): ☐

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

Contract Period:	Cost/Fee:	LOE:
11/01/2016 To 06/30/2019		0
This Action:		935
Total:		935

Work Plan / Cost Estimate Approvals

Contractor WP Dated:	Cost/Fee	LOE:
Cumulative Approved:	Cost/Fee	LOE:

Work Assignment Manager Name: Clifton Townsend (Signature) (Date)	Branch/Mail Code: Phone Number: 202-564-1576 FAX Number:
Project Officer Name: Shirley Harrison (Signature) (Date)	Branch/Mail Code: Phone Number: 202-566-1107 FAX Number:
Other Agency Official Name: Shirley Harrison (Signature) (Date)	Branch/Mail Code: Phone Number: 202-566-1107 FAX Number:
Contracting Official Name: Angela Lower (Signature) (Date)	Branch/Mail Code: Phone Number: 513-487-2036 FAX Number:

PERFORMANCE WORK STATEMENT
ICF CONTRACT EP-C-16-011
WORK ASSIGNMENT #2-14

TITLE: Support for OPPT's Chemical Prioritization

WORK ASSIGNMENT CONTRACTING OFFICER'S REPRESENTATIVE (WACOR):
Clifton Townsend (MC-7403M)
US EPA OCSPP/OPPT/RAD/AB1
1200 Pennsylvania Avenue, NW
Washington, D.C. 20460
Phone: (202) 564-1576 Fax: (202) 564-3760
E-mail: townsend.clifton@epa.gov

ALTERNATE WORK ASSIGNMENT CONTRACTING OFFICER'S REPRESENTATIVE (WACOR):
Iris Camacho (MC-7403M)
US EPA OCSPP/OPPT/RAD/AB1
1200 Pennsylvania Avenue, NW
Washington, D.C. 20460
Phone: (202) 564-1229 Fax: (202) 564-3760
E-mail: Camacho.iris@epa.gov

Contract PWS: 2.0, 3.0, 3.1 3.3, 3.4, 3.5, 3.8 and 4.0

LOE: 935 hours

PERIOD OF PERFORMANCE: Date of Issuance through June 30, 2019

BACKGROUND:

The Office of Pollution Prevention and Toxics (OPPT) of the U.S. Environmental Protection Agency (EPA) is responsible for work under a number of statutes including, principally, the Toxic Substances Control Act (TSCA), the Frank R. Lautenberg Chemicals Safety for the 21st Century Act, and Pollution Prevention Act of 1990 (PPA). The mission of the office is to assure that industrial chemicals are designed, manufactured, processed, and used in ways that maximize their benefits to society and minimize their impacts on human health and the environment; encourage the replacement of older, more hazardous chemicals and technologies with new, safer alternatives; and work to harness the use of pollution prevention technologies, whenever feasible.

OPPT's Risk Assessment Division (RAD) is responsible for health and environmental hazard and risk evaluations of chemicals regulated under the Frank R. Lautenberg Chemical Safety for the 21st Century Act. The Frank R. Lautenberg Chemicals Safety for the 21st Century Act amends the Toxic Substance Control Act (TSCA). Among other things, the amended TSCA requires EPA to conduct risk evaluations to determine whether a chemical substance presents an unreasonable risk of injury to health or the environment, without consideration of costs or other non-risk factors, including an unreasonable risk to a potentially exposed or susceptible subpopulation identified as relevant to the risk evaluation under the conditions of use. Most of the technical work occurs in OPPT/RAD but other divisions in OPPT may also engage in technical activities to support TSCA implementation activities.

Furthermore, the new TSCA legislation requires that EPA adhere to specific provisions regarding Scientific Standards, Weight of Evidence, and Availability of Information as articulated in Sections 26 (h), (i) and (j), respectively. TSCA requires that for each risk evaluation completed on a High-Priority Substance, EPA must begin a new risk evaluation. By the end of calendar year 2019, EPA must have at least 20 chemical risk evaluations ongoing at any given time on High-Priority Substances.

EPA is currently in the process of completing the risk evaluations for the first 10 chemicals to meet the obligations under Lautenberg Chemical Safety Act. By December 22, 2019, EPA must have designated at least 20 chemical substances as High-Priority and 20 chemical substances as Low-Priority. Following the risk evaluations of the first 10 chemicals, EPA will conduct risk evaluations on chemical substances designated as High-Priority Substances through the Prioritization process.

The Agency is in the process of prioritizing the next 20 chemicals substances that must undergo regulation via the Lautenberg Chemical Safety Act.

The purpose of this work assignment (WA) is to provide technical support for technical products required to meet the obligations under the Lautenberg Chemical Safety for the 21st Century Act. Specifically, the WA will focus on TSCA prioritization work that includes the identification, compilation, characterization, analysis, synthesis, and prioritization of data sources reporting data/information on potential exposure and hazards for chemical substances. The work performed under this WA will primarily support the identification of chemical substances to be designated as High priority for potential risk evaluations. The initial list of substances will be selected from the updated 2014 TSCA Work Plan (referred as the 2014 Work Plan list; Appendix A) after excluding those chemical substances that have been initiated through ongoing TSCA implementation activities[1]. The chemicals on the 2014 Work Plan list will be subject to the prioritization process for determination of high- or low priority for risk evaluation.

In addition, this work assignment will include support activities (e.g., literature searches) for risk evaluations for an additional 5 chemicals. EPA may also provide written technical direction (TD), as necessary, for additional work beyond these 25 chemicals substances, including support for overarching scientific issues (e.g., method development) that are important for the regulation of both new and existing chemicals under TSCA.

QUALITY ASSURANCE:

Tasks 1,3, and 4 in this work assignment may require the use of **secondary** data. Collection, use and analysis of data will be identical to the procedures described in the Programmatic Quality Assurance Project Plan (PQAPP) completed and approved. EPA has determined that this approved PQAPP is appropriate for the tasks outlined in this Performance Work Statement. Based on this determination, the contractor is not required to modify the approved PQAPP for this work assignment.

[1] Chemical substances that have been initiated through ongoing TSCA implementation activities are as follows: Asbestos, 1-Bromopropane, Carbon Tetrachloride, 1, 4 Dioxane, Cyclic Aliphatic Bromide Cluster (HBCD), Methylene Chloride, N-Methylpyrrolidone, Perchloroethylene, Pigment Violet 29 and Trichloroethylene. Decabromodiphenyl ethers (DecaBDE), Hexachlorobutadiene (HCBD), Pentachlorothiophenol (PCTP), Phenol, isopropylated, phosphate (3:1) and 2,4,6-Tris(tert-butyl) phenol are PBTs that were identified for action by EPA.

TASK DESCRIPTION:

Task 0: Work Plan and Monthly Progress Reports

The contractor shall develop a work plan that describes how each task will be carried out. The work plan shall include a schedule, staffing plan, level of effort (LOE), and cost estimate for each task, the contractor's key assumptions on which staffing plan and budget are based, and qualifications of proposed staff. In addition, the workplan shall include the requirement that all electronic and information technology (EIT) and all EIT deliverables be Section 508 compliant in accordance with the policies referenced at http://www.epa.gov/accessibility/. If a subcontractor(s) is proposed and subcontractors are outside the local metropolitan area, the contractor shall include information on plans to manage work and control costs.

The workplan shall explain that collection, use and analysis of data in this work assignment. It should be identical to the procedures described in the PQAPP. This task also includes monthly progress and financial reports. The monthly progress report shall summarize activities conducted for the reporting period, and in a separate QA section, whether significant QA issues have been identified and how they are being resolved. Monthly financial reports must include a table with the invoice LOE and costs` broken out by the tasks in this WA. The contractor shall immediately notify the WACOR if any changes to the tasks involving the collection and analysis of the data occur and prepare a SQAPP supplementing the Contract Level (QAPP] accordingly. Work on these tasks cannot proceed until the contractor receives the WACOR's notification of approval.

Deliverables: Work plan and monthly progress and financial reports submitted in accordance with contract requirements.

Task 1: Literature Search and Title/Abstract Screening

Under the ICF contract EP-C-14-001 WA 3-103 and 4-103, the contractor started the process to search for relevant information to assess and address the potential hazards, exposure and risks to workers, the general population, consumers and susceptible populations, for the first 10 chemicals undergoing TSCA risk evaluation. This also included searching for environmental fate information and characteristics of susceptible populations which might include age, sex, smoking status, pre-existing disease, genetic polymorphisms, socioeconomic status, race and ethnicity, body mass index, alcohol consumption, nutritional factors, and co-exposure to other chemical stressors. The contractor shall continue this task for the list of chemicals undergoing prioritization based on the 2014 Work Plan list. Although not anticipated, EPA may also ask the contractor to run literature searches to inform ecological risks.

Planning with EPA's Technical Team for Additional Chemicals:

1. Identify authoritative and/or trusted sources as well as secondary review articles in the peer-reviewed literature for each discipline searched (including environmental fate, engineering, exposure, human health) to help inform the type of data to be searched. In particular, this step will inform the process of preparing protocols, including preparing eligibility criteria in the form of Population, Exposure, Comparator and Outcome (PECO) or other relevant statements.

2. Prepare PECO and other statements (there will be slight differences by discipline) that identifies inclusion criteria and that will guide the literature search, title and abstract screening and subsequent full text screening (see task 2).

3. Work with WACOR and tech teams to develop exclusion criteria and design a tagging structure to organize the information. Use the tagging structures developed for the first 10 chemicals as a starting point.

4. Design search strategies for peer-reviewed and gray literature (e.g., government reports, industry websites) (as specified in the QAPP).

    - The contractor shall design searches that are comprehensive and as accurate as possible (that is, with as few "off-topic" studies as possible). This will include searching appropriate databases, using the most appropriate search terms as well as backwards reference searching. Forwards reference searching may also need to be used.

    - In developing the search strategies, the contractor shall consider how to obtain:

        - Information that can be used to assess and address the risks to workers, the general population, consumers and susceptible populations, and from exposure during particular periods of development (i.e., life stages). Characteristics of susceptible populations might include age, location, sex, smoking status, pre-existing disease, pregnancy, genetic polymorphisms, socioeconomic status, race and ethnicity, body mass index, alcohol consumption, nutritional factors, and co-exposure to other chemical stressors.

        - Information on environmental fate information. The contractor might also be asked to obtain data on physical and chemical properties although this will primarily be gathered by EPA.

5. Document the search strategy, including the sources, search terms and logic, and tag structure in a protocol for each chemical and discipline (i.e., there will be one protocol per chemical per discipline).

Execution:

1. Pending OPPT approval of the protocol, conduct the literature searches and revise as needed (e.g., check whether a sample of previously identified on-topic studies were captured in the searches).

2. The Contractor may assist EPA in conducting a pilot of applying the tags to the literature based on the tagging tree. If necessary, the pilot tagging will be conducted by two literature screeners per discipline (this may include one screener from ICF and one from EPA, but this will be specified in TD from EPA). These two screeners will review and tag the same 25-50 references. EPA will resolve any discrepancies in tagging.

o The tagging will be done using DistillerSR unless specified otherwise by Technical Direction (TD). All final tags will be uploaded in HERO where they can be accessed by both OPPT and the public.

3. Revise the protocol as necessary based on the pilot tagging and document changes in the protocol.

4. Implement full tagging with two literature screeners; EPA screeners may also be involved in this screening step.

5. Upload the final tagged results into HERO.

Assessment:

1. Check that the search results reflect a comprehensive search. This could be done, for instance, by doing backwards reference searching using authoritative or trusted literature sources, or by using additional experts. The contractor should identify additional ways to do this assessment.

2. ICF discipline lead reviews that the tags were applied accurately to a sample of references for each discipline.

3. Check that the results were uploaded correctly into HERO.

Assumptions for Costing Purposes:

For costing purposes, the contractor shall make the following assumptions:

Planning with EPA's Technical Team:

- Each ICF discipline lead, deputy, and researcher/note taker (see staffing plan) shall meet with their respective EPA(OPPT)technical team for up to six hours of total meeting time while executing this task.

- There shall be two rounds of review before each discipline's chemical protocols shall be considered ready for execution

Execution:

- The contractor shall assume that on average 7,500 references shall be tagged for each chemical across all disciplines and that tagging could take 1 minute per reference per screener (assume 50 references will be tagged by two literature screeners during the pilot and 7450 references will be tagged by only one literature screener).

- There shall be one round of updating each discipline's Protocol following the pilot tagging before it shall be
considered final.

- Assume that 3,000 references per chemical shall be on-topic and the pdfs uploaded to HERO with each reference taking 5 minutes to upload.

Assessment:

- EPA anticipates 20 hours of QA per chemical performed by each ICF discipline lead during the literature search and tagging to ensure that the searches are as comprehensive as possible and tags are applied accurately.

If the actual time to review the references differs substantially from this estimate, or if the total number of studies to be tagged is higher or lower, the contractor shall contact the WACOR to determine the appropriate next steps.

When performing the literature searches, the contractor shall communicate with the WACOR and technical contacts regularly to ensure that searches are refined and focused.

The WACOR (through the Federal HERO Staff) will provide HERO access to expert authors and relevant personnel, both Federal and state.

If needed, revisions to this literature search strategy may be made based on TD from the WACOR. Although not anticipated, the WACOR may also ask the contractor to run literature searches to inform ecological risks.

Deliverable Schedule:

- All studies for newly identified chemicals imported into HERO from the Literature Search, and the empty Tag Tree set up on each Project Page: to be specified by written TD from EPA.

- The contractor shall document the literature strategy and screening/sorting protocol in a document that will be provided to EPA as a deliverable. This document should include, as a minimum, the following information:

    - keywords used and databases searched,
    - number of references found in each database (PubMed, etc.)
    - Tag Tree to be used for screening/sorting the references in each project (chemical).

- Literature search and screening protocol: to be specified by written TD from EPA.

Task 2: Screen Literature for Relevance via a Full-Text Screen

As directed by the WACOR in written technical direction, the contractor shall conduct full-text screening of the on-topic literature identified in Task 1 to identify data/information that are potentially relevant for the assessment questions needed to meet the analysis plan needs. The contractor shall update the PECOs and other statements in conjunction with EPA and then develop exclusion criteria to filter out studies that are not relevant for the assessment. The contractor shall document the exclusion criteria for each question in the Protocol for each chemical and discipline.

Pending the WACOR approval of the Protocol, the contractor shall apply the exclusion criteria to the on-topic studies and update the Protocol as necessary during implementation. Titles and abstracts may be sufficient to screen some data sources for relevance, while full text review may be needed for other data sources. The screening will be done using DistillerSR, unless specified otherwise by TD, and the results will be uploaded into HERO. Following screening, the ICF discipline lead will check that the exclusion criteria were applied accurately and that the results were uploaded correctly into HERO.

Although uncertain, the WACOR may request that the contractor conduct this task for the new five TSCA risk evaluations. For costing purposes, the contractor shall assume that they will conduct full text screening for 1,000 on-topic references. The contractor shall also conduct full text screening supporting the five assessments of PBT chemicals.

When performing the screening, the contractor should communicate with the WACOR and technical contacts regularly to ensure that the screening process fits EPA's needs and that the WACOR and ICF WAM solve any issues in a timely manner. Additionally, if the actual time to review the references differs substantially from this estimate, or if the total number of studies to be categorized is higher or lower, the contractor shall contact the WACOR to determine the appropriate next steps.

Deliverable Schedule:

- The schedule for full-text screening literature and tagged references in HERO will be clarified by written TD from the WA COR.
- The contractor shall also provide documentation of the number of references screened and selected, including criteria-based rationale for including and excluding records. Note that the review of title and abstract may be sufficient to screen some data sources for relevancy, while full-text review may be needed for other data sources.

- The contractor shall also provide documentation flow diagram that graphically illustrates the number of titles, abstracts, and full articles reviewed during the literature search process

Task 3.0: Extract, Tabulate and Summarize Study Information

Since EPA must be transparent on the data considered and used for risk assessment purposes, the contractor shall extract and tabulate information by discipline for the suitable/usable studies identified in Task 2. The contractor shall work with the WACOR to identify the data elements to be included in the study tables and develop draft table templates and include them in the Protocol for EPA review and approval prior to extracting any information. Tabulated information will include, at a minimum, the study citation, the HERO identification number, and those data elements agreed by EPA. The data elements shall be documented.

The data tables will be used to evaluate and document the quality of the studies (see Task 2), as directed by TD from the WACOR, and will be designed to allow for evaluation consistent with the systematic review process. The WACOR may also ask, via TD, for study summaries in addition to the tabulated information, and this will be informed to the contractor by TD. The contractor shall revise the Protocol as necessary during implementation of this task.

The contractor shall perform a quality assurance check for the data tables prior to delivering them to the WACOR. Quality assurance checks will include, but not be limited to, comparing table entries and/or data elements in tables to information from the original publication and checking conversions as appropriate (e.g., ppm to mg/m^3). The quality assurance check will be performed by a scientist that was not involved in the initial development of the table being reviewed.

The WACOR may request the contractor to do this task by written TD. For purposes of estimating costs for this work assignment, the contractor shall assume data extraction for 200 studies for estimating costs.

Deliverable Schedule: The schedule for the data tables will be clarified by written TD from the WA COR.

Task 4: Evaluate the Reliability of Studies

Following the screening for relevance, the contractor shall screen studies for reliability to determine whether the information is of appropriate quality to be used in the assessment (either for quantitative assessment or as supporting studies used in a WOE evaluation). The contractor may also document study evaluations in the tables developed in Task 3. As necessary, the contractor shall provide and manage experts to perform this task done in the previous ICF contract EP-C-14-001 WA 4-103.

EPA will provide the evaluation strategies that the contractor shall use for the reliability screening by discipline to support the prioritization process. However, the WACOR may ask the contractor to develop and/or refine an approach for conducting the reliability screening if needed. Study quality evaluations should be independent of considerations regarding the direction or magnitude of study results.

The contractor may also conduct a first-tier data evaluation that will allow EPA to develop the conceptual model and analysis plan. The WACOR will issue chemical-specific TD to specify the level of data review and summarization.

The contractor shall provide the results of the data quality screening to the WACOR for review. The WACOR will determine which studies will be acceptable for use and communicate decision to contractor before moving to next step.

Deliverable Schedule: The WACOR will issue written TD from the WACOR clarifying the schedule for the data tables incorporating

the results of the evaluation in Task 4.

Task 5: Activities Supporting the Integration of Information and Other Technical Support

Based on the reliable studies identified in Task 4, the contractor shall provide support for the following activities related to data integration:

1) Evidence tables: The contractor shall prepare tables that summarize results from studies (e.g., toxicological studies, exposure studies) identified in Task 4 consistent with guidance from WACOR and technical contacts. The contractor shall also conduct quality assurance (QA) checks of summary tables developed by experts. As necessary, the contractor shall provide and manage experts to perform this task.

2) Graphical displays: The contractor shall prepare graphical displays of results from studies identified by EPA. The types or formats of the graphical presentation shall be discussed between the WACOR, EPA technical contacts and the contractor. The contractor shall provide expertise to develop or modify graphical displays as needed. The contractor shall also conduct quality assurance (QA) checks of the data used to generate graphical displays. As necessary, the contractor shall provide and manage experts to perform this task.

3) Integrated reports: The contractor shall provide written, integrative reviews of the results of the studies using a WOE approach. The contractor shall analyze the entire body of data taking into consideration quality, consistency, relevancy, coherence and biological plausibility. Because OPPT uses WOE determinations to support its chemical risk evaluations, the contractor shall document the procedures or methods used to weigh the evidence and the basis for the WOE conclusion or recommendation. This is a requirement under the amended TSCA. The contractor shall provide written outline(s) to the WACOR for review prior to beginning the written integrated review. The contractor shall participate in telephone meetings as needed with the WACOR. The contractor shall develop a draft and a final report to be reviewed and approved by the WACOR. The contractor shall also match the EPA Software (currently Microsoft Office365 Pro Plus, EndNote 7, HERO, LitCiter and Adobe Pro 11) for drafting and creating a corresponding 508-compliant PDF with "HERO Links" in the report.

4) Other support: The contractor shall address other issues that may arise within the context of the review of studies supporting OPPT's technical products. These issues may pertain, but not limited to, the interpretation of specific results in toxicological studies, synthesis and dose-response analysis of toxicological data, and issues pertaining to other disciplines (e.g., exposure, fate, engineering and ecotoxicology) or risk assessment issues (e.g., method development for new chemical risk evaluations) supporting OPPT's technical products under TSCA. As necessary, the contractor shall provide and manage experts to perform this task.

Deliverable Schedule: The deliverable schedule will vary depending on the subtask(s) and chemical, and will depend on the amount and complexity of the information to be evaluated/summarized. The schedule will be clarified within written TD from the WA COR

Task 6: Updates to literature search

The contractor shall perform literature search updates at regularly scheduled intervals during assessment development (i.e., through release of final risk assessment) and at least once after external peer review, if applicable. The interval (i.e., number of months) between literature search updates shall be determined in consultation with the WACOR. The literature search strategy shall be consistent with the strategy for the initial literature search and pertinent SOPs. The contractor shall add new references to HERO, tag references consistent with existing tags in HERO, and document the updated literature search strategy and findings.

If questions arise during the literature search and screening task (e.g., difficulties in narrowing down the number of "hits" from the search, questions about the relevance of certain types of papers or topics, retrieval of difficult to obtain documents or foreign language papers), the contractor shall contact the WACOR for further consultation.

Deliverable Schedule: The WACOR will issue written TD clarifying the schedule for the updates to the literature search conducted in Task 1.

SCHEDULE OF DELIVERABLES:

The contractor shall ensure that all 508 compliant documents developed in all tasks outlined in this work assignment will align with EPA's 508 compliance checks (keywords, titles, tables, tags, etc.). The contractor is responsible for maintaining and utilizing the same version of Adobe as the EPA for purposes of developing and maintaining 508 compliant documents. To the extent practical, documents which are developed for this work assignment, and are to be 508 compliant should be designed to be such from their inception, minimizing the effort for conversion and maximizing 508 compliance quality assurance.

Tasks	Deliverables
0- Work Plan and Monthly Progress Reports	Per contract requirements
1 - Literature Search	To be clarified in written TD.
2 - Screen literature for suitability/utility	To be clarified in written TD.
3- Tabulate and Summarize Study Information	To be clarified in written TD.
4- Evaluate the Reliability and Relevance of Studies	To be clarified in written TD.
5- Activities Supporting the Integration of Information and Other Technical Support	To be clarified in written TD.
6- Updates to Literature Search	To be clarified in written TD.

CONFERENCE/MEETING GUIDELINES AND LIMITATIONS:

The contractor shall immediately notify the EPA Contracting Officer, CL COR and WA COR of any anticipated event involving support for a meeting, conference, workshop, symposium, retreat, seminar or training that may potentially incur $20,000 or more in cost during performance. Conference expenses are all direct and indirect costs paid by the government and include any associated authorized travel and per diem expenses, room charges for official business, audiovisual use, light refreshments,

registration fees, ground transportation and other expenses as defined by the Federal Travel Regulations. All outlays for conference preparation should be included, but the federal employee time for conference preparation should not be included. After notifying EPA of the potential to reach this threshold, the contractor shall not proceed with the task(s) until authorized to do so by the Contracting Officer.

TRAVEL: No travel is anticipated for the performance period.

SPECIAL REPORTING REQUIREMENTS: The contractor shall discuss the progress of the Work Assignment and any issues in periodic teleconference calls, approximately on a bi-weekly basis (every other week) with the WACOR. The WACOR will schedule these teleconference calls.

Confidential Business Information: The contractor shall not handle confidential business information under this WA.

NOTICE REGARDING GUIDANCE PROVIDED UNDER THIS PROJECT

Guidance is strictly limited to technical and analytical support. The contractor shall not engage in activities of an inherent governmental nature such as the following:

(1) Formulation of Agency policy
(2) Selection of Agency priorities
(3) Development of Agency regulations

Should the contractor receive any instruction from an EPA staff person that the contractor ascertains to fall into any of these categories or goes beyond the scope of the contract or WA, the contractor shall immediately contact the Contract-Level COR, WACOR or CO.

Appendix A: Supporting information on High Priority candidates

High-Priority Candidates with available identifiers (e.g., CAS #, Chemical Name(s))

[an Excel or csv file/table as needed]

75 Remaining chemicals from the 2014 Work Plan List

	Chemical Name	CASRN	DSSToxID as of 6/15/18
1	Acetaldehyde	75-07-0	DTXSID5039224
2	Acrylonitrile	107-13-1	DTXSID5020029
3	tert-Amyl methyl ether	994-05-8	DTXSID8024521
4	Antimony & Antimony Compounds**	Category	DTXSID30872414
5	Arsenic & Arsenic Compounds	Category	DTXSID90872415
6	Barium Carbonate	513-77-9	DTXSID1029623
7	Benzenamine	62-53-3	DTXSID8020090
8	Benzene	71-43-2	DTXSID3039242
9	Bisphenol A (BPA)	80-05-7	DTXSID7020182
10	1,3-Butadiene	106-99-0	DTXSID3020203
11	Butanamide, 2,2'-[(3,3'- dichloro[1,1'-biphenyl]- 4,4'-diyl)bis(azo)]bis[N- (4-chloro-2,5 - dimethoxyphenyl)-3-oxo- (Pigment Yellow 83)	5567-15-7	DTXSID1021453
12	Butanamide, 2-[(4- methoxy-2-nitrophenyl) azo]-N-(2-methoxyphenyl)-3-oxo- (Pigment Yellow 65)	6528-34-3	DTXSID0052336
13	Butyl benzyl phthalate (BBP) - 1,2-Benzene- dicarboxylic acid, 1- butyl 2(phenylmethyl) ester	85-68-7	DTXSID3020205
14	4-sec-Butyl-2,6-di-tert- butylphenol	17540-75-9	DTXSID8029315

15	Cadmium & Cadmium Compounds	Category	DTXSID10872417
16	Chromium & Chromium Compounds**	Category	
17	Cobalt & Cobalt Compounds**	Category	DTXSID30872419
18	Creosotes	8001-58-9	DTXSID2023987
19	Cyanide Compounds (Limited to dissociable compounds)	Category	DTXSID40872420
20	Dibutyl phthalate (DBP) (1,2-Benzene-dicarboxylic acid, 1,2- dibutyl ester)	84-74-2	DTXSID2021781
21	o-Dichlorobenzene	95-50-1	DTXSID6020430
22	p-Dichlorobenzene	106-46-7	DTXSID1020431
23	3,3'-Dichlorobenzidine	91-94-1	DTXSID6020432
24	3,3'-Dichlorobenzidine dihydrochloride	612-83-9	DTXSID1020433
25	1,1-Dichloroethane	75-34-3	DTXSID1020437
26	1,2-Dichloroethane	107-06-2	DTXSID6020438
27	trans-1,2- Dichloroethylene	156-60-5	DTXSID7024031
28	1,2-Dichloropropane	78-87-5	DTXSID0020448
29	Dicyclohexyl phthalate	84-61-7	DTXSID5025021
30	Di-ethylhexyl phthalate (DEHP) - (1,2-Benzene- dicarboxylic acid, 1,2- bis(2-ethylhexyl) ester)	117-81-7	DTXSID5020607
31	Di-isobutyl phthalate (DIBP) - (1,2-Benzene- dicarboxylic acid, 1,2- bis-(2methylpropyl) ester)	84-69-5	DTXSID9022522
32	Di-isodecyl phthalate (DIDP) - (1,2-Benzene- dicarboxylic acid, 1,2-diisodecyl ester)	26761-40-0	DTXSID4025082
33	Di-isononyl phthalate (DINP) - (1,2-Benzene- dicarboxylic acid, 1,2-diisononyl ester)	28553-12-0	DTXSID4022521

34	1,2-Dimethoxyethane (Monoglyme)	110-71-4	DTXSID0025286
35	2-Dimethylaminoethanol	108-01-0	DTXSID2020505
36	Di-n-octyl phthalate (DnOP) - (1,2-Benzene- dicarboxylic acid, 1,2- dioctyl ester)	117-84-0	DTXSID1021956
37	Ethanone, 1-(1,2,3,4,5,6,7,8-octahydro-2,3,5,5- tetramethyl-2- naphthalenyl)- ***	54464-59-4	DTXSID5052200
38	Ethanone, 1-(1,2,3,4,5,6,7,8-octahydro-2,3,8,8- tetramethyl-2- naphthalenyl)- ***	54464-57-2	DTXSID7031290
39	Ethanone, 1- (1,2,3,4,6,7,8,8a-octahydro- 2,3,8,8- tetramethyl-2-naphthalenyl)-	68155-67-9	DTXSID6041923
40	Ethanone, 1- (1,2,3,5,6,7,8,8a-octahydro- 2,3,8,8- tetramethyl-2-naphthalenyl)-	68155-66-8	DTXSID9052397
41	Ethylbenzene	100-41-4	DTXSID3020596
42	Ethylene dibromide	106-93-4	DTXSID3020415
43	bis(2-Ethylhexyl) adipate	103-23-1	DTXSID0020606
44	2-Ethylhexyl 2,3,4,5-tetrabromobenzoate (TBB)	183658-27-7	DTXSID9052686
45	bis(2-Ethylhexyl) - 3,4,5,6-tetrabromophthalate (TBPH)	26040-51-7	DTXSID7027887
46	Formaldehyde	50-00-0	DTXSID7020637
47	2,5-Furandione	108-31-6	DTXSID7024166
48	1-Hexadecanol	36653-82-4	DTXSID4027991
49	1,3,4,6,7,8-Hexahydro-4,6,6,7,8,8-hexamethylcyclopenta [g]-2-benzopyran (HHCB)	1222-05-5	DTXSID8027373

50	2-Hydroxy-4-(octyloxy) benzophenone	1843-05-6	DTXSID9027441
51	Lead & Lead Compounds**	Category	DTXSID00872421
52	Long-chain chlorinated paraffins (C18-20)	Category	DTXSID60872422
53	Medium-chain chlorinated paraffins (C14-17)	Category	DTXSID20872423
54	4,4'-Methylene bis(2- chloroaniline)	101-14-4	DTXSID5020865
55	4,4'-(1-Methylethylidene)bis[2, 6-dibromophenol] (TBBPA)	79-94-7	DTXSID1026081
56	Molybdenum and Molybdenum Compounds**	Category	DTXSID80872424
57	Naphthalene	91-20-3	DTXSID8020913
58	2-Naphthalenecarboxylic acid, 4-[(4-chloro-5- methyl-2-sulfophenyl) azo]-3-hydroxy-, calcium salt (1:1) - (Pigment Red 52)	17852-99-2	DTXSID2066270
59	Nickel & Nickel Compounds**	Category	DTXSID40872425
60	N-Nitroso- diphenylamine	86-30-6	DTXSID6021030
61	Nonylphenol and Nonylphenol Ethoxylates (NP/NPEs)	Category	
62	Octamethylcyclotetra- siloxane (D4)	556-67-2	DTXSID7027205
63	4-tert-Octylphenol (4-(1,1,3,3-Tetramethylbutyl)- phenol)	140-66-9	DTXSID9022360
64	p,p'- Oxybis(benzenesulfonyl hydrazide)	80-51-3	DTXSID7026499
65	Phosphoric acid, triphenyl ester (TPP)	115-86-6	DTXSID1021952
66	Phthalic anhydride	85-44-9	DTXSID2021159
67	Styrene	100-42-5	DTXSID2021284
68	Tribromomethane (Bromoform)	75-25-2	DTXSID1021374

69	1,1,2-Trichloroethane	79-00-5	DTXSID5021380
70	Triglycidyl isocyanurate	2451-62-9	DTXSID4026262
71	Tris(2-chloroethyl) phosphate (TCEP)	115-96-8	DTXSID5021411
72	Vinyl chloride	75-01-4	DTXSID8021434
73	m-Xylene	108-38-3	DTXSID6026298
74	o-Xylene	95-47-6	DTXSID3021807
75	p-Xylene	106-42-3	DTXSID2021868

**Includes substances that have multiple Work Plan metal compounds (e.g. "Cobalt molybdenum nickel oxide (CoMo2NiO8)")

***Two PBT chemicals met the TSCA section 6(h) criteria; however, manufacturers for these substances submitted timely requests to EPA for risk evaluations (Ethanone, 1-(1,2,3,4,5,6,7,8-octahydro-2,3,5,5-tetramethyl-2-naphthalenyl) and Ethanone, 1-(1,2,3,4,5,6,7,8-octahydro-2,3,8,8-tetramethyl-2-naphthalenyl)).

Appendix B: Supporting information on endpoints/information/data related to disciplines

To be revised under consultation with EPA staff

	Use Information
SIDS Elements/Disciplines	Chemical Quantity
Pchem Props	Melting Point
	Boiling Point
	Density (for inorganics)
	Vapor Pressure
	Octanol-Water Partition Coefficient
	Water solubility
	Dissociation constant(s) in Water
	Redox Potential (for inorganics)
Fate	Photodegradation
	Stability in Water (Hydrolysis)
	Transport and Distribution between Environmental Compartments (mackay fugacity model)
	Aerobic Biodegradation (Ready and Inherent)
	Bioaccumulation (optional)
Eco Tox	Fish Acute
	Daphnid Acute

	Algal Grown Inhibition
	Chronic Tox – most sensitive species in acute
	Terrestrial Tox (optional/if available)
	Sediment Tox (optional/if available)
Health Tox	**Acute Tox (oral, dermal or inhalation, depending on relevant exposure routes)**
	Acute Skin Irritation/Corrosion (optional)
	Acute Eye Irritation/Corrosion (optional)
	Skin Sensitization (option/if available)
	Repeated Dose Tox (relevant exposure pathways)
	Genetic Tox-In vitro; TWO endpoints
	Genetic Tox-In vivo (if one of the in vitro is positive)
	Repro Tox-Fertility (OECD 415/416/421/422)
	Dev Tox-Pre & Post natal (OECD 414/421/422)
	Neurotox (optional)
	Carcinogenicity or Chronic-2 yr (optional)
Exposure	**Experience with Human Exposure (workplace exposure conce; indoor environment conc; frequency, duration, etc.)**

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-15

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-16-011	11/01/2016 To 06/30/2019 Base Option Period Number 2	Economic Impact of 404 (g), 40

Contractor: ICF Incorporated, L.L.C.

Specify Section and paragraph of Contract SOW: 1.2, 2.0, 3.3.2, 3.4, 3.5, and 3.8

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 07/01/2018 To 06/30/2019

Comments:

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

SFO (*Max 2*): ☐

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

Contract Period:	Cost/Fee:	LOE:
11/01/2016 To 06/30/2019		0
This Action:		370
Total:		370

Work Plan / Cost Estimate Approvals

Contractor WP Dated:	Cost/Fee	LOE:
Cumulative Approved:	Cost/Fee	LOE:

Work Assignment Manager Name: Ghulam Ali (Signature) (Date)	Branch/Mail Code: Phone Number: 202-566-1004 FAX Number:
Project Officer Name: Shirley Harrison (Signature) (Date)	Branch/Mail Code: Phone Number: 202-566-1107 FAX Number:
Other Agency Official Name: Lawrence Edelmann (Signature) (Date)	Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: Sandra Stargardt-Licis (Signature) (Date)	Branch/Mail Code: Phone Number: 513-487-2006 FAX Number:

PERFORMANCE WORK STATEMENT (PWS)
ICF CONTRACT EP-C-16-011
WORK ASSIGNMENT #2-15

Title: Economic Impact of 404 (g), 404 (c) and 401 Programs

Work Assignment Contracting Officer Representative (WACOR):
Ali Ghulam
U.S. EPA, Office of Water
1200 Pennsylvania Ave., N.W., 4303T
Washington, DC 20460
Phone: (202) 566-1004
Email: ali.ghulam@epa.gov

Alternate WACOR:
Todd Doley
OW/OST/EAD(4303T)
US EPA, 1200 Pennsylvania Ave, NW (6233Z)
Washington, DC 20460
Telephone #:202-566-1160
Email: doley.todd@epa.gov

Contract PWS: 2.0, 3.4 and 3.8

Period of Performance: Date of issuance to June 30, 2019

Estimated Level of Effort: 370 hours

Background:
The Environmental Protection Agency (EPA) has initiated actions to update the regulatory requirements and/or guidance for the Clean Water Act (CWA) Sections 401 and 404 (c) and (g). Economic studies and analyses will be developed in support the Action Development Process (ADP), the options and internal deliberations. The purpose of this TO is to support a range of economic analyses for all these regulatory actions as they are considered further and implemented by EPA.

Section 401 – State Certification
Under CWA Section 401, a federal agency cannot issue a permit or license that may result in a discharge into waters of the United States, unless the state or authorized tribe where the discharge would originate issues a section 401 certification or waives its authority to do so (the state or tribe can also deny a permit). 401 certification indicates that the proposed project would be consistent with CWA water quality standards, effluent limitation guidelines for existing and new sources, toxics requirements and appropriate provisions of state or tribal law. The CWA

establishes a time limit of "any reasonable period not to exceed one year" for states and authorized tribes to complete their 401certification analysis and decision. Section 401 is a direct grant of authority to the states and does not provide the EPA with any oversight authority.

EPA is considering issuing guidance to clarify section 401 certification procedures and highlight resource leveraging opportunities between states, tribes, project applicants, and permit and license-issuing agencies. To illustrate these opportunities for projects of varying resource intensities, the EPA needs to review the current costs and benefits associated with 401 certification.

Section 404 – General Requirements

Section 404 establishes a program to regulate the discharge of dredged or fill material into waters of the United States, including wetlands. Activities in waters of the United States regulated under this program include fill for development, water resource projects (such as dams and levees), infrastructure development (such as highways and airports) and mining projects. Section 404 requires a permit before dredged or fill material may be discharged into waters of the United States, unless the activity is exempt from Section 404 regulation (e.g., certain farming and forestry activities).

The basic premise of the program is that no discharge of dredged or fill material may be permitted if: (1) a practicable alternative exists that is less damaging to the aquatic environment or (2) the nation's waters would be significantly degraded. In other words, when a person applies for a permit, he or she must first show that steps have been taken to avoid impacts to wetlands, streams and other aquatic resources; that potential impacts have been minimized; and that compensation will be provided for all remaining unavoidable impacts.

For most discharges that will have only minimal adverse effects, a general permit may be suitable. General permits are issued on a nationwide, regional, or state basis for particular categories of activities. The general permit process eliminates individual review and allows certain activities to proceed with little or no delay, provided that the general or specific conditions for the general permit are met. For example, minor road activities, utility line backfill, and bedding are activities that can be considered for a general permit. States also have a role in Section 404 decisions, through State program general permits, water quality certification, or program assumption under Section 404 (g).

Section 404(c) – EPA Veto

Under CWA Section 404(c), EPA may initiate a public process to prohibit or restrict the specification by the Corps or by a state of a site for the discharge of dredged or fill material. EPA's current interpretation of Section 404(c) authority allows prohibition or restriction to be exercised before a permit is applied for, while an application is pending, or after a permit has been issued. Because Section 404(c) actions have mostly been taken in response to unresolved Corps permit applications, this type of action is frequently referred to as an EPA veto of a Corps permit. Although the Corps authorizes approximately 68,000 permit activities in the Nation's waters each year, EPA has used its Section 404(c) authority very sparingly, issuing only 13 final veto determinations since 1972.

An EPA Regional Administrator initiates a 404(c) action if he or she determines that the impact of a proposed permit activity is likely to result in significant degradation of municipal water supplies (including surface or ground water) or, significant loss of or damage to fisheries, shellfishing, wildlife habitat, or recreation areas.

Section 404(g) – Assumption

Under CWA Section 404 (g), a permit is required before dredged or fill material can be discharged into the waters of the United States. The CWA provides states and tribes the option of assuming administration of the Section 404 permit program for certain waters within state or tribal jurisdiction provided the state and tribe develops a permit program consistent with all applicable statutory and regulatory requirements and submits an application to EPA. Within 120 days of receiving a complete application, EPA will decide whether to approve the assumption request after considering public comments and determining if all requirements are met.

States/tribes must be able to issue permits that assure compliance with all applicable statutory and regulatory requirements, including the CWA Section 404(b)(1) Guidelines. States/tribes and the reviewing federal agencies must be able to review proposed projects to evaluate, avoid, minimize and compensate for anticipated impacts. EPA's assumption regulations establish minimum requirements that must be included in the state/tribe's permit application so that sufficient information is available to make a thorough analysis of anticipated impacts. These minimum information requirements generally reflect the information that must be submitted when applying for a Section 404 permit from the Army Corps of Engineers.

The EPA is responsible for oversight of assumed programs to ensure that state/tribal programs are in compliance with applicable requirements and that state/tribal permit decisions adequately consider, minimize, and where required compensate for anticipated impacts. States/tribes must evaluate their programs annually and submit an annual report to EPA assessing their program. EPA's assumption regulations establish minimum requirements for the annual report.

Proposed activities are regulated through a permit review process. An individual permit is required for potentially significant impacts. Individual permits are reviewed by the U.S. Army Corps of Engineers, which evaluates applications under a public interest review, as well as the environmental criteria set forth in the CWA Section 404(b)(1) Guidelines, regulations promulgated by EPA. Some states have assumed this permitting authority and regulate these activities.

Purpose and Goals

EPA's tentative objective is to minimize the negative repercussions of the State certification without reducing or relaxing the water quality protection provided by the CWA. Similarly, EPA would like to minimize the scope of the veto to make the approval process more efficient reducing the uncertainty of projects. The EPA aims to explore the likelihood of states and tribes' adoption of the entire or the parts of the fill and dredge program. EPA most likely will develop regulatory proposals related to these tasks. At this time, no drafts of proposals exist. These are very high priority projects which needed to be completed in urgency situation. This work

assignment contains the tasks about literature review and the data collection. The contractor will not duplicate any work conducted any other contract vehicle.[a]

Performance Work Statement (PWS):

Task 1: Prepare Work Plan and Cost Estimates

The contractor shall develop a workplan to address all tasks in this work assignment. The workplan shall outline, describe and include the technical approach, resources, timeline and due dates for deliverables, a detailed cost estimate by task, and a staffing plan. If a subcontractor(s) is proposed and subcontractors are outside the metropolitan DC area, the contractor shall include information on plans to manage work and contract costs. All Professional levels, each P level hours and total dollars for each task will be provided and costs greater than $100.00 shall be itemized in detail. The contractor shall provide the job number with all invoices to facilitate their processing. Due to the nature of the work assignment, the contractor may be requested to revise the workplan in response to the contract level contracting officer representative or WACOR's review comments and resubmit for approval.

Task 2: Quality Assurance Plan for Literature Search, Data Collection and Analyses

Quality Assurance Project Plans are usually required under the Agency's Quality Assurance Policy CIO-2105, formerly EPA Order 5360.1 A2 and implementing guidance CIO-2105-P-01-0. All projects that involve the generation, collection, analysis, and use of environmental information and data must have an approved Quality Assurance Project Plan (QAPP) in place prior to the commencement of the work. The contractor shall develop a QAPP. The QAPP includes the procedures to assess the quality of primary and secondary data and models. The QAPP also includes a process for documenting the quality of both primary and secondary data used in the cost analysis of the policies. The quality of data is analyzed from the perspective of developing economic estimates that can be used to support the Agency's decision-making process with respect to 401, 404 (g), (c) program. The contractor shall prepare a draft revision of the already existing QAPP for the task order no. 1-09 (contract no. 68HE0C18D0001) within 10 days of receipt of this WA to be consistent with the requirements of this work assignment, instead of preparing a new QAPP. The Contractor shall prepare a final revised QAPP within 10 days of receipt of EPA comments unless otherwise directed by the EPA WACOR. See details of quality assurance towards the end of the document.

Task 3: Economic Analysis of Assumption of Dredge and Fill Program 404 (g)

EPA is in the process of revising 404 rules to make it easier or to provide more flexibility and clarity for states and tribes to assume the permitting authority for administering the 404 permitting program. To develop regulatory options, assessment of cost and benefit for the public, industry, states, tribes and the federal government is required. The CWA provides states and tribes the option of assuming administration of the Section 404 permit program for certain

[a] The purpose of this work assignment is set the stage for conducting economic analyses subsequently. We are splitting the tasks into two different contract vehicles because of the very short time period for the tasks needed to be completed.

waters within state or tribal jurisdiction, provided the state or tribe develops a permit program consistent with all applicable statutory and regulatory requirements and submits an application to EPA. It is important to note that assumption by a state or tribe does not alter CWA jurisdiction over waters of the United States. Moreover, nothing in the revised regulations is intended to nor will alter in any way the activities that require a 404 permit or the underlying 404 permit regulations.

The contractor shall build upon the analyses already completed, or in the process of being conducted and data collected about the waters of the US rules. The contractor shall review the literature on the permitting cost and barriers for the state to assume the 404(g) dredge and fill program. The contractor shall collect data that will help it to assess the permitting costs to each of the entities (public, industry, states, tribes and federal government) if state(s)/tribe(s) assume all eligible waters (the Army Corps of Engineers will retain permitting authority on some subset of the waters due to Rivers and Harbors Act and the CWA Authorities). Similarly, the contractor shall review the existing information collection request and collect data about the permitting cost of the Army Corps of Engineers including fee charged from the permittees. The contractor may consider collecting the data for large, medium and small projects and assumable permits. The contractor shall collect the data on the time period of approval of a permit not only by state and tribe but also by the Army Corps of Engineers. The contractor shall, at the same time, develop a preliminary draft of the methodology to estimate the social cost of approval and enforcement of permits that are theoretically transferred to the states and tribes.

Task 4: Literature Review and Data Collection of Regulatory Uncertainty of 404 (c) Veto

The contractor shall review the literature about the impact (cost) of the regulatory uncertainty (EPA (c) veto) and collect the relevant data if any. The contractor should rely on the white paper on literature review of impacts of permitting uncertainty on permittees (404, and possibly beyond) which is planned to be developed under an amendment to the task order 1-09 (contract no. 68HE0C18D0001). The contractor shall review permits that EPA vetoed 13 times, to determine the impact on the permittees. The contractor shall prepare a preliminary draft of the economic assessment memo that is suitable for inclusion in the docket for the rule (if developed) that would restrict the time period under which EPA choses to veto a permit (or objects to a permit). The contractor shall participate in meetings by phone to discuss the regulatory uncertainty and other issues related to 404 (c) project.

Task 5: Literature Review and Data Collection of 401 State Certification

There is no database of 401 state certifications or waivers. However, there are instances in which a state has requested modifications to a federal permit before granting its approval. The contractor shall review the literature for several examples of states exerting their 401 certification authority to serve as case studies, focusing on the time it took for state review, and the impact on permittees resulting from state certification. The contractors shall produce a list of the types of federal permits that could have impacts on state water quality sufficient to cause a state to not summarily waive 401 certification. The contractor may be directed through technical direction to analyze data on time to issue CWA 404 permits, as this data is available to EPA

from the Army Corps of Engineers. While assessing the overall impact of certification, the contractor shall also focus on assessing the cost impact qualitatively or quantitively if practical, of those certifications that delayed or impacted the permittees adversely. The contactor shall also attempt to assess the impact if the state and tribal certification is restricted to certain subset of conditions. The contractor shall prepare a preliminary economic impact memorandum.

Sources of Information for Economic Analyses/Studies Tasks

To prepare the economic impact studies mentioned under task 3, 4 and 5, the contractor may focus on the following, but not limited to, sources of information:

1) Existing states which have assumed the program – New Jersey and Michigan.
    a. To determine if these states have programmatic costs for assumption of the program, check with EPA Regional contacts for EPA oversight costs for the following.
    b. Regional EPA staff costs
    c. Army Corps of Engineers costs
2) States considering assumption- Determine/collect if the following states have estimates of program assumption costs
    a. Florida – costing estimate in progress
    b. Minnesota – has estimated costs
    c. Virginia – has estimated costs
    d. Oregon[b] – has estimated costs
    e. Arizona - check and collect if it has estimated the costs
3) The Final Report of the Assumable Waters Subcommittee (May, 2017) FACA report
4) The program information collection request (ICR) analysis which was done to support the program's information collection
5) The universe of 404 permits which the US-Army Corps of Engineers issued or denied (and possibly the number of draft permit actions which the Corps considers but never get formally submitted) in the last 5 years by state and authority.
    a. EPA is working with the Corps to get this information
6) Army Corps of Engineers "retained waters list"; basically, the Rivers and Harbors Section 10 waters; they have this for most of the districts + % of waters that are River and Harbors Act 10 vs Waters of the U.S. rule.

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[b] Oregon has long had an interest in 404 assumption. In 1995, the state submitted a complete draft application package to the EPA. Between 1995 and 2005, DSL (department of state lands) conducted outreach, including focus groups, to assess public support for state assumption. The message consistently conveyed by the public was that, given a choice between the state and federal permitting programs, the public would choose the state program. A key benchmark was achieved in 2001 when Senate Bill 172 was enacted. The bill made changes in Oregon's removal-fill law to allow DSL to assume the program; however, additional legislative approval is needed to allow state assumption. Oregon renews effort to assume 404 regulation in 2012. DSL initiated a second effort to examine the benefits and risks of 404 assumption. See: https://www.oregon.gov/dsl/WW/Documents/404Assumption.pdf

7) The economics analysis for the NPDES update rule (https://www.epa.gov/sites/production/files/2015-09/documents/npdesea.pdf)
8) Waters of the U.S. environmental assessment (in development) (useful for federalism analysis).
9) Economic analyses of the waters of the U.S. rules.
10) Fredriksson (2018) report on federalism.

VIII. SCHEDULE OF DELIVERABLES:

VIII. SCHEDULE OF DELIVERABLES:

Task	Deliverable	Due
1	**Task 1:** Prepare Work Plan and Cost Estimates	Work plan after 15 days of WA receipt
2	**Task 2**: Quality Assurance Plan for Literature Search, Data Collection and Analyses	Draft revised Quality Assurance Project Plan Within 10 days of WA receipt Final revised Quality Assurance Project Plan for Literature Search, Data Collection and Analyses within 7 days of receipt of EPA's comments
3	**Task 3:** Economic Analysis of Assumption of Dredge and Fill Program 404 (g)	Preliminary draft of methodology by January 15, 2019. Draft economic analysis due February 15, 2019.
4	**Task 4:** Literature Review and Data Collection of Regulatory Uncertainty of 404 (c) Veto	Draft memo due February 15, 2019.
5	**Task 5:** Literature Review and Data Collection of 401 State Certification	Draft memo due February 15, 2019.

Travel

Travel: Travel will be required for the contractor to attend EPA (Washington, DC) for one-day under this work assignment. Any travel outside of the Washington, D.C. metro area must be approved by the WACOR and Contract-Level COR prior to travel.

Quality Assurance

A. Quality Assurance is an important component of EPA's work to assure that minimum quality standards for the use intended are attained. When completing work under this work assignment the contractor shall identify, attach and follow any internal standard operating procedures (SOPs) for secondary environmental data management and public comment analysis and summary. If necessary, the contractor will supplement these SOPs per the direction of the EPA WACOR. This work assignment involves the use of existing data. This work assignment requires the Contractor to update the approved QAPP prepared for task order 1-09, contract number EP-C-16-020. The Contractor shall follow all procedures and requirements set forth for development of the original Quality Assurance Project Plan (QAPP), as specified below. The Contractor shall include a version (revision) history page that summarizes changes made. The Contractor also shall provide EPA with copies of any modified SOPs or checklists. The Contractor shall update the above mentioned QAPP for secondary (existing) data handling and analysis. No collection of field samples will be collected under this work assignment. QAPPs are required under the Agency's Quality Assurance Policy CIO-2105, formerly EPA Order 5360.1 A2 (May 2000), and implementing guidance CIO-2105-P-01-0 (May 2000). All projects that involve the generation, collection, analysis and use of environmental data must have an approved QAPP in place prior to the commencement of work. Examples of these environmental data operations are provided in Table A.1 below.

- **Under no circumstances shall work that involves the generation, collection, evaluation, analysis, or use of environmental data be performed until the Contractor receives written notification from the EPA WACOR that EPA has approved the Contractor's updated QAPP.**

- Any non-sampling/non-analytical work that involves the generation, collection, evaluation, analysis, or use of environmental data that is initiated prior to EPA approval of the Contractor's updated QAPP must be performed in accordance with the approved QAPP. EPA may request the Contractor to furnish written documentation from the Contractor showing that the Contractor has complied with this requirement.

The Contractor shall update the above mentioned QAPP so that it addresses systematic planning for this work assignment. The contractor shall use the active voice. The updated QAPP shall provide enough detail to clearly describe objectives of the project supported by the work assignment; the type of data to be collected, generated, or used under this work assignment to support the project objectives; the quality objectives needed to ensure that these will support the project objectives; and the quality assurance and quality control activities to be performed to ensure that any results obtained are documented and are of the type, quality, transparency, and reproducibility needed. In addition, the Contractor, must address the quality of the data provided by EPA, at the start of the work assignment, if any.

The QAPP updates must be consistent with the document, *EPA Requirements for Quality Assurance Project Plans: EPA QA/R-5* (**http://www.epa.gov/quality/qs-docs/r5-final.pdf**). The updated QAPP shall include any SOPs or checklists. The Contractor shall use the following QAPP Template for existing data. The Contractor shall provide a crosswalk between the submitted QAPP and this template if the Contractor follows a different format. The Contractor shall comply with all QA/QC requirements set forth in the QAPP. The QAPP shall also be consistent with **A Summary of General Assessment Factors for Evaluating the Quality of Scientific and Technical Information and Addendum to: *A Summary of General Assessment Factors for Evaluating the Quality of Scientific and Technical Information.***

In addition, the Contractor shall include a separate and identifiable discussion in all reports (deliverables) about the quality of the data, and summarize the QA/QC activities that were or will be used to ensure and confirm the usability of the data for the project, identify any deviations from QA protocols (e.g., from the QAPP), problems encountered and corrective actions taken, and any limitations on the usability of the data for the purposes intended.

The Contractor also shall comply with the following procedural requirements related to compliance with the QAPP:

- The Contractor shall submit all drafts and final QAPP in Microsoft Word format, and in tracked changes as appropriate. The Contractor may also submit these documents in PDF format.

- The Contractor shall notify the EPA WACOR if it determines that changes to the QAPP are warranted (e.g., due to organizational changes, revised technical approaches, or other unforeseen circumstances).

- If, during the Period of Performance of this work assignment, the EPA WACOR provides technical direction that revisions to the QAPP are necessary, the Contractor shall follow all procedures and requirements set forth for development of the original QAPP, as specified above. The Contractor shall include a version (revision) history page that summarizes changes made. The Contractor also shall provide EPA with copies of any modified SOPs or checklists.

- All QA documentation prepared under this work assignment, shall be considered non-proprietary, and shall be made available to the public upon request.

The Contractor shall provide electronic copies of the monthly progress reports to the EPA Contract Level COR (CLCOR) (previously titled Project Officer (PO)) and WACOR. Each progress report shall describe the technical work and expenditures for the same time period as the corresponding invoice. The reports shall list by task the amount of work completed and include a table of hours by personnel for each task. The reports also shall identify any problems or difficulties, lessons learned, Quality Assurance (QA)/Quality Control (QC) activities, and next steps.

The Contractor shall immediately notify the WACOR by telephone of any problems that may impede performance, impact QA related activities, and any corrective actions needed to solve the problems. The Contractor shall also include this in the Monthly Technical and Cost Progress Reports.

The Contractor shall submit an email that proposes a standardized naming convention and version control for all deliverables associated with the work assignment. This system will ensure that deliverables are clearly named and dated and that the sequence of versions of a document is clear. The EPA work assignment manager will review the email and then provide the Contractor with written notification of approval or edits that need to be made. After receiving notification of approval, the contractor shall use this standardized convention for all deliverables associated with the work assignment.

The contractor shall provide the updated QAPP to the EPA Contracting Officer's Representative (COR) according to the schedule of Deliverables below.

Table A.1. Examples of work that involves the collection, generation, evaluation, analysis, or use of environmental data

Item	Examples
Data	Includes field sampling information (sample location information, flow measurements, temperature, pH, physical observations, etc.), laboratory measurements (e.g., chemical, physical, biological, radiological measurements), data collected from questionnaires, economic data, census data, and any other types of existing data (i.e., data generated for a different purpose or generated by a different organization)
Data generation	Includes field studies, laboratory studies, and generation of modeling output
Data collection	Includes field surveys, questionnaire surveys, literature searches, and third party data
Data evaluation	Includes data inspection, review, assessment, and validation
Data analysis	Includes statistical, engineering, and economic analysis, and testing, evaluation, and validation of methods and models; database creation, data extraction, and data manipulation
Data Use	Any use of data to support EPA decisions, regulations, policy, publications, or tools (including effluent guidelines, 304(m) program, standards, environmental assessments, and models, tools, or reports disseminated by EPA to assist other organizations in implementing environmental programs)

Note that QAPPs are required for the development or revision of models and software that support the generation, collection, evaluation, analysis, or use of data. (A model is a set of equations and assumptions used to predict unknown data.) The QAPP updates shall also be consistent with Template for Developing a Generic (or project-specific) Quality Assurance Project Plan (or plan elements) For Model Applications, Region 1ModelQAPPTemplate2009.pdf, attached.

When existing models are used as a tool to generate or evaluate data, the project QAPP must describe the model and explain how it will be used and how its output will be evaluated to ensure the modeling effort meets the overall quality objectives for the project. Development or revision of new models also must be supported by a QAPP that describes the objectives for the model, the quality criteria that will be applied to the model, and the procedures for evaluating whether the model meets those criteria.

Table A.2

QAPP Elements in an Existing Data Gathering Project

The following table identifies suggested QAPP elements for projects that will rely on the use of existing data. The table includes a brief summary of things to include when addressing each element. For some elements, it also includes things to avoid or exclude and examples. Note that while it is essential to address all applicable elements in the QAPP, it is not essential to address each one separately; elements may be combined to minimize redundancy and streamline readability and utility.

QAPP Section	QAPP Section
A. Project Management	**A1. Title and Approval (Traditional QAPP Element A1)** *Identifies key project officials and documents their approval of the QAPP.* Use a short, descriptive title with key words that will help establish the relevance of the project to future searchers. May either use a separate title and approval page or include approval lines on the title page. If using a separate title page, include the project/grant/contract identifier on the title page; if using a single page for both the title and approvals, include the project/grant/contract identifier in the title itself. Include a Revision History page that lists the date, number, and a brief description of each revision.
	A2. Table of Contents (Traditional QAPP Element A2) *Helps reviewers and users quickly locate different information within the QAPP.* Identify each section and the page number where those sections can be found. List all attachments and appendices. Tables and figures also should be identified in the Table of Contents for long QAPPs (e.g., more than 25 pages). SOPs may be included as attachments or appendices to the QAPP. If SOPs or other data gathering, analysis, or evaluation protocols are not documented in, or attached to the QAPP, they must be readily available to the project team and QAPP reviewers through some other means. When including SOPs, QAPP should clearly state that the SOP has been reviewed and found to be acceptable for use with or without modification.
	A3. Distribution List (Traditional QAPP Element A3) *Names of key project personnel responsible for project implementation and/or funding, and who should have the QAPP.* Can include placeholders for project roles that have not yet been filled.

QAPP Section	QAPP Section
	A4. Project/ Task Organization (Traditional QAPP Element A4) *Identifies individuals involved with major aspects or phases of the project and their project responsibilities.* Include roles and responsibilities of all significant project participants, their contact information, and their respective organizations. (Note "role" is different from "responsibility." Role refers to a person's position on the project, whereas responsibility refers to the duties assigned to that role.) Include a project organization chart that visually shows the hierarchy, lines of communication, and lines of authority among various groups. It is useful to provide a general chart showing relationships among various organization followed by separate charts that show the details for each organization. No need to include each and every technical staff member who will support the project, but make an effort to include each role (e.g., statistician, data analyst).
	A5. Problem Definition & Background (Traditional QAPP Element A5) *Background information and statement of specific problem to be solved, decision to be made, or outcome to be achieved.* Describe your project goal and project objectives. Note that identifying a project goal (or "purpose") is different than identifying your project objectives. A project goal provides the answer to the general question "Why am I doing this?" In contrast, project objectives are what will be achieved to address the goal. Example text: Project Goal - Determine if effluent guidelines for X Industrial Category need to be revised. Project Objectives - Identify treatment systems currently in use by the industry, determine if other treatment techniques are available, characterize current pollutant loads from the industry, etc. Note: By clearly defining project objectives, you are laying the ground work for identifying the types of data you need to collect.

QAPP Section	QAPP Section
	A6. Project/ Task Description (Traditional QAPP Element A6) *Summary of work to be performed and products, project schedule, maps, tables, etc., showing locations* This should be a brief description of the project, and should summarize what kind of data you will be gathering, where and how you will obtain this data, your schedule (in terms of significant milestones). In some projects, it may be helpful to include general maps of the area of interest. It is not necessary to include project budgets in the QAPP, although it may be helpful to note if the design was constrained by project budgets and/or schedules. Avoid pasting work plan (deliverables) schedules in this section; instead, summarize major milestones/ overall schedules, but clearly delineate when technical aspects of each phase of the environmental data operations will begin and end. Don't create excessive redundancy by including extensive detail here; details are addressed elsewhere. QAPP length is not important; QAPP substance is. Example text: EAD and its support contractor will gather existing data from a variety of sources in order to develop technical and economic profiles of the Airport Deicing Industry. Data to be gathered includes information about: airport sizes and types; geographic areas in which deicing operations are performed; deicing processes (e.g., types of operations, chemicals used in deicing fluids, climatic influences on deicing operations); toxicity of deicing fluids or chemicals used in the fluids; waste management strategies (e.g., containment and treatment of deicing fluids); pollution prevention techniques (e.g., recycling deicing fluids, techniques for use of less harmful chemicals or lower volumes of deicing fluids); environmental impacts of airport deicing; pollutant loadings; industry trends in use, containment, and treatment of deicing fluids; and financial information (ownership, management, accounting, potential cost impacts of regulation). The project team will examine a variety of potential sources for such information. Such sources may include: EPA databases (e.g., the Permit Compliance System, Toxic Release Inventory, STORET); other EPA offices that have collected data from this industry or data pertaining to pollutants discharged by this industry; State, local and other federal agencies; and other organizations that may be identified during the course of the data identification and collection process (e.g., federal agencies in other countries that are responsible for air transportation and air transport associations). Data gathering will begin immediately upon approval of this QAPP and continue throughout fiscal year XXXX.
	A7. Overall Quality Objectives and Criteria (Traditional QAPP Element A7) *Overall quality objectives for the project and the performance criteria to achieve those objectives/ Outputs from the systematic planning process.* Focus your discussion on the overall quality needed to support the project goals and objectives you described in A5. (Specific criteria used for individual data elements will be addressed in subsequent sections.) EPA's Information Quality Guidelines can be used to help determine the level of quality needed for the intended use of the data.

QAPP Section	QAPP Section
	A8. Special Training and Certifications (Traditional QAPP Element A8) *Any specialized training or certifications needed by personnel; plans for providing, documenting, and assuring this training.* Include specialized skills, training or certification requirements only (e.g., security clearance, CBI training) and plans for ensuring and documenting that these training requirements are met. For existing data projects, identify specialized expertise needed to evaluate the relevance and appropriateness of the existing data to your project needs. (In a primary data gathering study, you have the opportunity to design the study to collect representative samples of interest. To do so, you bring appropriate experts into the design, e.g., engineers, hydrogeologists, fisheries biologists, etc. The same is true for existing data, except that you need their expertise to evaluate the data that was already collected and determine if it meets your needs.) It is generally not necessary include non-specialized training or skills (e.g., chemistry degree, field sampling experience). Example scenario: A project team is interested in studying the health of juvenile fish in the Colorado River. A literature search reveals a study on Colorado River Cutthroats. The paper was published the previous year in a peer reviewed journal, and it indicates that the data were fully validated. The project team considers it to be directly relevant to their needs because it involves a native species in the river, is recent data, relies on validated data, and was peer reviewed. However, the team never consulted a fisheries expert, who would have pointed out that the study targeted fish of harvestable size and weight, which are adults, not juveniles. In this case, the QAPP might state that someone with fisheries expertise is necessary for this project and has been identified (or describes the plan for obtaining this necessary skill set).
	A9. Project-level Documentation and Records (Traditional QAPP Element A9) *Description of process for distributing approved QAPP and other planning documents to staff, a list of final work products that will result from the project (e.g., final report, QA report, Technical Development Document, project database, proposed regulation), a description of the process and individuals for developing, reviewing, approving, and disseminating those work products.* Explain how all project quality assurance documents and records (e.g., the QAPP, SOPs, required forms or checklists) will be managed. This includes how they will be stored and made available to staff. Explain how updates will be implemented and distributed. Identify the final work products that will be produced from the project and explain who will be responsible for developing, reviewing, and approving the products. If they will be disseminated to the public, explain the method that will be used and the processes that will be employed to ensure it is ready for such dissemination. Focus on high-level project planning documents and records and on final work products. Day-to-day recordkeeping and documentation is addressed elsewhere in the QAPP.

QAPP Section	QAPP Section
B. Data Gathering	**B1. Data Needs (New/Modified QAPP Element)** *Detailed description of the existing data needed to fulfill the project goals.* In the Project/Task Description above, you *summarized* the kind of data you will be gathering. In this section, you will provide a *detailed* list of the specific data elements that will be needed to support the project goals. Include a description of the scope (e.g., range of treatment options, geographic range) of the data elements that you need. If your project includes the development or update of one or more project databases, identify and define each field in the database(s). The intent of this section is to ensure that all QAPP reviewers, approvers, and users understand exactly what data are needed for the project and to avoid misunderstandings about what a particular data element means. If you have already documented some or all of these fields in another source, such as a database population plan, a data element dictionary, an SOP, etc., it is acceptable to reference that document. However, any documents referenced in the QAPP must be either readily available to all members of the project team and to QAPP reviewers and approvers, or they must be attached to the QAPP.
	B2. Potential Data Sources (New/Modified QAPP Element) *Description of the potential data sources that may be used, and the rationale for considering these sources.* Potential sources of previously collected data that should be identified here may include photographs, topographical maps, background information from facility or state files, census data, meteorological data, publications, etc. If a literature search will be conducted, describe the search engines that will be used and the key words that will be searched on. If databases will be used, describe each database in terms of who developed and operates it and the type of data it contains. Define your specific search/query parameters. Similarly, describe any other potential sources of data and the rationale for considering or using them. Source selection is often an iterative process with projects that rely on existing data; do not forget to update the QAPP if you need to change your initial source selection strategy. The updated QAPP should describe your original process as well as your revised approach and the reasons for revising the approach.

QAPP Section	QAPP Section
	B3. Criteria for Selecting Data Sources (New/Modified QAPP Element) *Description of the criteria that will be used to evaluate the candidate data sources, and how you define these criteria.* The criteria will vary according to your needs. Examples of possible criteria might include the reliability, applicability, age, and format of the data source, or even the quantity of data available in the candidate data course. Regardless of the criteria that you choose, explain how you define each one. Explain your rating system for each criterion (e.g., a quantitative numeric scale or a qualitative ranking scale). Example: A project team is developing a new database to provide information about potential water system contaminants. The database will include basic identifying information (e.g., chemical name, common name, CAS Registry number, chemical class,), physical characteristics (e.g., molecular weight, density, vapor point, octanol water partition coefficient), usage (e.g., predominant sources, availability, annual production, history of usage), fate/transport characteristics, etc. The database will be entirely populated with existing data from a number of sources, including: published references sources, such as the Merck Index and the CRC Handbook of Chemistry and Physics; databases from EPA, CDC, OSHA, DOE, or other federal agencies; other online databases (e.g., World Health Organization's International Program on Chemical Safety website and database), and the published literature. The team defines the "applicability" of each data source on the following characteristics: (1) the relevance of the information to the intended use of the data in the new database (e.g., a contaminant's properties in a water matrix versus other matrices), and (2) the number of data elements for any given contaminant(s) that can be populated using the source. It then establishes a high, medium, or low ranking system, in which sources that provide five or more directly relevant data elements for a chemical are rated as "high," sources that provide two to four directly relevant data elements for a chemical are rated as "medium," sources that provide only one directly relevant data element are ranked as "low,", and sources that provide no directly relevant data elements are rates as "Not Applicable" and, therefore, excluded from further consideration. Similarly, the team decides to define the reliability of the data based on whether the information is current and peer-reviewed, how far removed the data are from the original source, and whether the data are from a preferred and widely used source, and established a similar high/medium/low basis for ranking such data against their reliability criteria.

QAPP Section	QAPP Section
	B4. Data Value Selection Approach (New/Modified QAPP Element) *Description of the approach that will be taken for selecting specific data values from the selected data sources.* Once you have screened your potential sources, you may find that more than one source offers the data element(s) you need, that only one source provides values for the data elements of interest, or that some sources address multiple data elements of interest. Describe the criteria and procedures that will be used to determine which value(s) are most appropriate for use in your project. For data that does not meet the pre-established specifications, explain how you will decide if it is usable, and how you will document the decision. Example: For the project described in the B3 element example above, if a data element is available from only one source, and the value is deemed to be reliable, the source is used. If, however, the only available source yields a questionable data value, the contractor will consult with EPA and additional experts, and if it is used, will apply a flag to identify the limitation (e.g., not peer reviewed, documentation of methodology incomplete, conditions not directly comparable to conditions of interest). If a data source provides more than one value for a particular data element, and some are recommended values, some are measured values, and some are estimated values, the contractor will use the recommended value, provided it is scientifically valid. If no recommended value is available, the contractor will use the measured value. The contractor will only use estimated values when no recommended or measured values are available, and the estimated values will be flagged as such in the database. If multiple different values are available for the condition of interest, the contractor will consult the primary literature to determine how each of the conflicting values was generated and to determine which value is most appropriate for use. Preference will be given to values where the explanation is most complete and applicable for the new database.
	B5. Resolving Data Gaps (New/Modified QAPP Element) *Description of process for identifying and addressing data gaps that exist after candidate data sources have been evaluated and appropriate data values have been identified.* Projects involving the use of existing data are often cyclical in nature because it is difficult to gather all the data needed in a single step. In most cases, an initial round of data gathering yields important information, but also leaves data gaps that were not located as well as additional data needs that were not previously considered. Describe the process the project team will use to identify data gaps and address those gaps. Also, describe the process the team will use to identify new data elements that may be needed. If your processes for addressing data gaps will involve the same data source and data value selection approaches previously described, it is not necessary to repeat those in detail. Instead, refer the reader to the applicable sections and focus describing any new processes, sources, activities, or criteria that will be considered.

QAPP Section	QAPP Section
	B6. Data Gathering Documentation and Records (New/Modified QAPP Element) *Description of processes that will be used to document the sources and data that were identified, considered and either rejected or accepted.* Describe how you will document the source selection results, including any sources that you decided against and the rationale for not using that result. Failure to document your rationale for excluding data sources can lead to accusations of 'cherry picking' the data. Where possible, use checklists that capture each of the applicable source/data selection criteria listed above to document your assessment of each candidate source/data element. For data that are deemed acceptable and will be used in the project, explain how you will associate each data element to its original source citation. This includes bibliographic information, telephone contact reports, email messages, etc. Example text: The contractor will use checklists to document the results of each source and data element assessment. Examples of these checklists are provided in Figures 1 and 2. The contractor will design the project database so that the data source citations and links for each data element can be maintained within each table. The contractor also will design the database so that the entire bibliography, which represents all sources of data in the database, can be viewed and printed as a report by contractor and EPA staff. Data limitations also will be documented directly in the database with the corresponding data value. Any data determined to be of questionable quality will flagged using standardized data flags (e.g., not peer reviewed, documentation of methodology incomplete). All records will be retained throughout the duration of the contract and for X years after contract closeout. All data sources will be stored with the date the source was accessed, and respective data reports, checklists, and evaluation criteria rankings. The contractor will maintain all data that was obtained in hardcopy format in a physical filing system; an electronic filing system will be used to maintain all original electronically obtained data. Both filing systems will include the complete data source citation, date of access, method of access, and, if applicable, Internet links. Some electronic data may be in the form of a compact disk (CD), in which case, a duplicate copy of the data (CD) will be maintained in the hard copy filing system as well as the electronic filing system.

QAPP Section	QAPP Section
C. Data Management	**C1. Standardization of Data Elements (New/Modified QAPP Element)** *Description of the process that will be used to ensure that units and other key measures are captured and standardized in the database.* The units of measurement should be reported for all data sets. If project needs dictate that all fields be standardized to a single set of units (e.g., U.S. dollars for economic data, ug/L for chemical data), identify the standard units that will be required for each data element. If standardization of data elements will not be needed, explain the process for ensuring that the data presented in varying units are comparable enough for use in the project and that project staff members will be able to readily identify differences in units. When considering standardized units, consider both (1) simple imperial/metric conversions (e.g., ounces to grams) and (2) whether the units all can really be converted to a common meaning. Identify the procedures that will be employed to convert data reported in other units to the standardized units, including any rounding or truncating procedures, and procedures for ensuring these conversions are performed correctly. If you already described your process for ensuring comparability of units in Section B as part of your data selection criteria, you may reference that process rather than repeat it here. Example scenario: Some results may be reported in wet weight while others are in dry weight; these are not directly comparable without additional information. How will this be handled? Similarly, some results will be reported in µg/L and others will be reported in ng/L. How will this be handled?

QAPP Section	QAPP Section
	C2. Data Entry (New QAPP/Modified Element) *Description of process for manually entering data obtained from existing sources.* Explain the process for manually entering selected data into the project database, who will be responsible for such data entry, and the QC strategies that will be taken to ensure that the database accurately and completely captures the original source data. Example text: Two data entry processes will be used for this project. A dual data entry process will be used to capture data elements that are that are presented consistently for a large body of data. For example, this process will be used to capture data obtained from industry survey responses, because the responses are all presented in the same format and are all responding to the same questions. Two clerical staff members will independently enter the designated data from each form into a data entry database created for this purpose. The Database Administrator will then run an automated comparison of the two data sets and generate an error report that identifies any discrepancies. The Data Entry Supervisor will use this report along with the original data set to identify and implement the corrections that are needed. Once the corrections have been made, a printout of the final, corrected database will be provided to the Data Population Manager for review and approval. A copy of the original error report also will be provided so that the Data Population Manager can confirm the corrections made were appropriate. A second data entry approach will be employed for data elements that are not presented consistently, and therefore, require enough subject matter knowledge to identify the data element of interest within the source (e.g., a published journal article that describes treatment technologies). In such cases, the original data entry will be performed by junior members of our technical staff team, and the Data Population Manager will perform a QC review of 10% of the data entered into the database. When performing these QC checks, the Data Population Manager will review the selected data values against their original source to verify that data elements are being populated with the appropriate data and that the data is being transcribed accurately. Regardless of which approach is used, corrective action will be taken to correct all errors identified as well as any systemic problems revealed (e.g., multiple reviewers show an inconsistent understanding of the data value needed for a particular field, one reviewer shows consistent problems in reversing numbers).
	C3. Merging or Uploading Electronic Data from Existing Sources (New/Modified QAPP Element) *Procedures that will be followed to ensure that errors are not introduced during the upload/merge process and that the final database reflects the original dataset.* If data are available electronically, and will be merged into the project database, explain the procedures that will be followed to ensure that errors are not introduced during the merging process and that the final database accurately reflects the original dataset(s).

QAPP Section	QAPP Section
	C4. Data Review (New/Modified QAPP Element) *Description of the process for ensuring that the data have been recorded, transmitted, and processed correctly.* Examples include checking data entry for transcription, calculation and reduction errors, and checking data transfers to determine if there are any deficiencies, such as missing data elements, registry errors, or shifting of data fields. If you already described your process for such reviews in Sections C2 or C3, it is not necessary to repeat the process here. Instead, you may point the reader to those sections.
	C5. Data Storage and Manipulation (New/Modified QAPP Element) *Description of how the existing data will be stored, who will be responsible for access and maintenance, and how it will be incorporated with other project data to support the project goal/decision to be made.* This element is used to document the hardware, software, and personnel requirements for managing and incorporating the existing data into the project, and the QC strategies that will be employed to ensure that the integrity of the data is not compromised during data storage, access/retrieval, updates, or other manipulation.
D. Data Quality Assessment and Use	**D1. Data Quality Verification and Data Quality Reporting (New/Modified QAPP Element)** *Description of your process for verifying that the final set of existing data to be used for the project is sufficient to meet your project needs.* Describe how you will determine if the overall data meets the criteria originally specified for the project, and how you will document and report these determinations. For data that don't meet the specifications, explain how you will determine if they are usable and how you will document the decision. Note that this differs from Criterion B5, which focused on the completeness of individual data sets gathered from given sources. Section D1 addresses the overall quality of the data set you have gathered/assembled. Example scenario: After reviewing all data gathered for the project, you identify some data elements that do not meet the original specifications, but are, the "best available" from the sources identified. In some cases, it may not be feasible (e.g., due to cost or schedule limitations) or possible (e.g., the data just do not exist) to obtain existing data for the data elements in question nor is it possible to collect primary data that would address these gaps. Explain how you document decisions to use such data, and how you will include the description of the data quality limitations in the work product that results from the use of those data (e.g., directly in the project database, in the final project report, in a separate QA report).

QAPP Section	QAPP Section
	D2. Use/Analysis of the Existing Data (New/Modified QAPP Element) *Description of how the data will be summarized or analyzed to meet the project objectives.* In the "Problem Definition & Background," you described the "big picture" use of the data. In this section, you will provide details regarding exactly how you will use these data (e.g., calculations, statistics). Explain or list what you will calculate (e.g., mean, median, % removal, a curve of cost vs. flow, etc.) and the data elements that will be used to make those calculations. Include applicable calculations and equations (if known) or explain how you will develop them. If you plan to exclude outliers, explain how you will define outliers and the basis for excluding such data. If exact methodologies that will be used to analyze the data may need to be developed or modified during the course of data analysis, explain the process by which such methodologies will be documented (e.g. via memoranda, analysis plans, email), who is responsible for reviewing/approving their use, and how the methodologies will be checked to ensure they yield the desired products. Describe the activities you will use during the data analysis stage ensure the analyses are being implemented as specified and will support the project objectives. Explain your procedures for identifying and notifying appropriate personnel if changes to the originally planned procedures are warranted, and the process for approving, documenting, and implementing such changes. Example scenario: Explain if and how "not detected" results will be used in calculating average concentrations, explain the specific procedures used to calculate pollutant loads, identify the production parameter(s) that will be used to calculation production normalized loads, describe how percent recycle and percent removals will be calculated, and explain how cost curves will be developed.
	D3. Methodology Documentation and Conceptual Review (New/Modified QAPP Element) *Procedures for documenting the methods used for data analysis, and how those methodologies will be reviewed during the initial stages of work development, before the analyses are executed.* In some cases, the exact methodologies that will be used to analyze the data may need to be developed and/or modified during the course of data analysis. This section is used to document the process by which such methodologies will be documented (e.g., via written memoranda, analysis plans, email), who is responsible for reviewing/approving their use, and how the methodologies will be checked to ensure they yield the desired products.
	D4. Technical Review of the Data Analysis (New/Modified QAPP Element) *Process for ensuring that the data analysis is being performed correctly.* Describe the activities you will use during the development and execution of the data analysis stage of the project to ensure the analyses are being implemented as specified in the QAPP and the analyses will support the project objectives. Explain your procedures for identifying and notifying appropriate personnel if changes to the originally planned procedures are warranted, and the process for approving, documenting, and implementing such changes.

QAPP Section	QAPP Section
	D5. Final Verification of Data Analysis and Reconciliation with User Requirements (New/Modified QAPP Element) *Procedures for verifying that the analysis results and work products are usable and support the needs of the project.* Describe the process for reviewing the final work product to ensure that the work was generated in accordance with the QAPP, that the work product addresses the overall project goals and objectives (i.e., it provides the information needed to answer the key questions). Describe how you will evaluate whether the analysis results "make sense" in the context of the project. Explain how you will document the results of this assessment, and how you will describe and communicate any limitations of the data or the data analyses that were used to prepare the final work product and that there will be a QA section in the technical support document or other document that addresses the data collection, production, analyses and use.

A.1 Data Quality Act/Information Quality Guidelines Requirements

The Data Quality Act (also known as the Information Quality Act) requires EPA to ensure that influential information disseminated by the Agency is sufficiently transparent in terms of data and methods of analysis that the information is capable of being substantially reproduced. To support compliance with these data transparency/ data reproducibility requirements, EPA plans to include QAPPs as part of any rulemaking record documentation to be made available to the public. The Contractor may claim information in QAPPs as confidential; if the Contractor chooses to do so, the Contractor shall submit a sanitized (i.e., public) version and an unsanitized (i.e., confidential) version at the time the QAPP is submitted for approval by EPA. The sanitized version shall be included in the public docket for the applicable rulemaking (or other docket record), and the unsanitized version shall be included in a non-public (i.e., confidential) portion of the docket (or record).

Information contained in the approved QAPP and analyses and results generated in accordance with the QAPP under this work assignment shall be transparent and reproducible and meet the requirements of the Data Quality Act for influential information. EPA's *Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity, of Information Disseminated by the Environmental Protection Agency* (EPA/260R-02-008, October 2002), https://www.epa.gov/quality/guidelines-ensuring-and-maximizing- quality-objectivity-utility-and-integrity-information referred to as "EPA's Information Quality Guidelines," describe EPA procedures for meeting Data Quality Act requirements. Section 6.3 of EPA's Information Quality Guidelines indicate that "especially rigorous robustness checks" should be applied in circumstances where quality-related information cannot be disclosed due to confidentiality issues. Where applicable, the Contractor should indicate which results were obtained using the tools (standard operating procedures (SOPs), checklists, and guidelines) that the Contractor designates as confidential so that the EPA WAOCOR can easily identify the areas that shall require rigorous robustness checks and document that those checks have been performed. At the discretion of the EPA WACOR, the contractors may be requested

to prepare pre-dissemination review checklist as described in Appendix B of the Office of Water Quality Management Plan, April, 2015. If this is required, the EPA WACOR will notify the Contractor through written technical direction.

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-16

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-16-011	11/01/2016 To 06/30/2019 Base Option Period Number 2	Lit Search for SDWA Activities

Contractor: ICF Incorporated, L.L.C.

Specify Section and paragraph of Contract SOW: 2.1,2.2,2.3,2.5 thru 2.7,2.9 and 2.10,3.1, 3.6....

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 03/11/2019 To 06/30/2019

Comments:

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

SFO (*Max 2*): ☐

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

	Contract Period:	Cost/Fee:	LOE:
	11/01/2016 To 06/30/2019		0
This Action:			750
Total:			750

Work Plan / Cost Estimate Approvals

Contractor WP Dated:		Cost/Fee	LOE:
Cumulative Approved:		Cost/Fee	LOE:

Work Assignment Manager Name: Barbara Soares (Signature) (Date)	Branch/Mail Code: Phone Number: 202-566-1437 FAX Number:
Project Officer Name: Shirley Harrison (Signature) (Date)	Branch/Mail Code: Phone Number: 202-566-1107 FAX Number:
Other Agency Official Name: (Signature) (Date)	Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: Angela Lower (Signature) (Date)	Branch/Mail Code: Phone Number: 513-487-2036 FAX Number:

PERFORMANCE WORK STATEMENT
ICF CONTRACT # EP-C-16-011
WORK ASSIGNMENT #2-16

TITLE: Literature Searches for Various Chemicals to Support Safe Drinking Water Act (SDWA) Activities

WORK ASSIGNMENT CONTRACTING OFFICER'S REPRESENTATIVE (WACOR):

Barbara Soares (Mail Code 4303)
Office of Water, Office of Science and Technology
Health and Ecological Criteria Division (HECD)
United States Environmental Protection Agency (USEPA)
1200 Pennsylvania Avenue NW
Washington DC, 20460
Telephone #:202-566-1437
E-mail address: soares.barbara@epa.gov

ALTERNATE WACOR:

Jamie Strong (Mail Code 4304T)
Office of Water, Office of Science and Technology
Health and Ecological Criteria Division (HECD)
United States Environmental Protection Agency (USEPA)
1200 Pennsylvania Avenue NW
Washington DC, 20460
Telephone #:202-566-0056 Fax#: 202- 566-1140
E-mail address: strong.jamie@epa.gov

LOE Hours: 750 hours

PERIOD OF PERFORMANCE: Date of issuance through June 30, 2019

CONTRACT PWS: 2.1 thru 2.3, 2.5 thru 2.7, 2.9 and 2.10, 3.1, 3.6, 3.8, 4.1 thru 4.3

****Note: No Confidential Business Information data will be needed in the course of this work assignment.**

BACKGROUND: The Health and Ecological Criteria Division (HECD), Human Health Risk Assessment Branch (HHRAB) of the Office of Science and Technology (OST) works closely with the Office of Ground Water and Drinking Water (OGWDW) in developing risk assessment documents which support the derivation of maximum contaminant level goals (MCLGs) and health advisories for contaminants found in drinking water as part of statutory requirements outlined in the Safe Drinking Water Act (SDWA).

PURPOSE: The purpose of this work assignment (WA) is to provide technical support services to HECD for developing literature search strategies, conducting literature searches and potentially assisting in the systematic review of literature searches for various:

- regulated chemicals identified for regulatory revision as part of Six Year Review 4
- unregulated chemicals which may become regulated through regulatory revision as part of Six Year Review 3 or Regulatory Determination 4
- unregulated chemicals contained on the candidate contaminant list (CCL) 4 and 5 or
- unregulated and emerging chemicals of concern identified as needed

This WA is intended to support literature searches on various contaminants as the need arises. HHRAB often requires short-term and quick-response work to revise or amend analyses for specific chemicals, or to initiate exploratory work on a new chemical. This work assignment directly supports HECD mission to produce and publish scientifically sound, and implementable guidance and criteria to protect human health from contaminants found in drinking water. Specifically, this work assignment includes tasks to perform literature searches for chemicals identified as potentially posing a risk to human health through the ingestion of drinking water.

QUALITY ASSURANCE: The tasks in this work assignment require the use of existing data. Consistent with the Agency's quality assurance (QA) requirements, the contractor shall follow the Agency approved ICF March 2017 Programmatic Quality Assurance Project Plan (pQAPP) for Collection, Use, and Analysis (including Model Application) of Existing Data under EPA Contract EP-C-16-011 in order to assure the quality of the data used under this work assignment. The scope of the March 2017 pQAPP covers existing data review, existing peer reviewed model application, but does not anticipate data generation or acquisition.

The contractor shall comply with the EPA approved pQAPP. The project specific quality assurance requirements must be addressed in the work plan and monthly progress reports as specified under Task 1. The contractor shall discuss with the WACOR if any of the specific work assignment tasks are not readily covered under the approved pQAPP. Any additional quality assurance requirements must be addressed in the work plan and monthly progress reports and, if needed, be covered by a work assignment (WA)-specific QAPP supplement, which must be approved by the WACOR before activities covered by the additional QA language begin under this work assignment. A final QA statement detailing the Quality Assurance and Quality Control (QA/QC) procedures for compiled data and any summaries generated in this work assignment are required when all tasks are completed.

PERFORMANCE WORK STATEMENT (PWS):

Under this PWS, an episode of work (aka "request") will be initiated by written Technical Direction (TD). Each request will specify deadlines for delivering drafts and final work products. An initiating TD will identify specific Tasks (enumerated below) to be performed.

The contractor shall provide personnel who are proficient with the software tools Microsoft Excel, Endnote, and, when appropriate, systematic review tools such as Distiller and HAWC.

The contractor shall prepare documents in the format specified in the TD for each chemical. It is possible that the scope of the systematic review and the deliverable may change depending on the chemical. Documents shall be technically edited for format and grammar before being delivered to the WACOR.

Deliverables shall be provided to the WACOR in electronic formats compatible with EPA-supported software (e.g., Excel spreadsheets, Word documents). The WACOR requests that all Excel spreadsheets also be delivered in .csv format.

The contactor shall develop and maintain internal documentation and data pertaining to all assumptions, data sources, databases, procedures, analyses, used to support and execute EPA's requirements and deliverables, in order that results can be replicated. The contactor shall provide access to this internal documentation upon request by the WACOR or the Contract-Level COR.

The contractor shall submit drafts of all deliverables to the WACOR for review prior to submission of the final product. These drafts shall clearly specify the methods, procedures, considerations, assumptions, relevant citations, data sources and data that support any conclusions and recommendations. The contractor shall incorporate all the WACOR comments into all final deliverables, unless otherwise agreed upon by the WACOR.

TASK 1: Work Plan and Monthly Progress Reports

Task 1.1 Work Plan

The contractor shall develop a detail work plan and cost estimate for each task outlined in this work assignment. The plan should contain, but not limited to, work-flowchart, elaborate schedule (task-wise), staffing plan and qualifications of proposed staff, budget for each task and level of effort (LOE). Prior to the submission of the work plan, the contractor shall consult with the WACOR via conference call to mitigate any potential issues that need clarifications. The contractor shall include information on plans to manage work and control contract costs. All P levels, hours and total dollars for each task will be provided and costs greater than $100.00 shall be itemized in detail. The contractor shall provide their job number with all invoices to facilitate their expediency.

Deliverables: Conference call Due Date: Within two weeks after receipt of WA

Task 1.2 Monthly Progress Reports

This task also includes monthly progress and financial reports. The monthly progress report shall indicate, in a separate QA section, whether significant QA issues have been identified and how they are being resolved. Monthly financial reports must include a table with the invoice LOE and costs delineated by the tasks in this WA. These reports should also indicate an estimate for the next month by task and if any lagging costs are expected. EPA realizes these estimates are just approximate values and is interested in having this information for internal budgeting purposes.

As described in the Quality Assurance Section, the contractor must comply with the approved pQAPP for the use of secondary data and, if applicable, application of peer reviewed existing models. The monthly progress report shall indicate, in a separate QA section, whether significant project-specific QA issues have been identified and how they are being resolved.

Deliverables: Monthly progress report Due Date: per contract requirements

TASK 2: Systematic Literature Search

Task 2.1 Literature Search Strategy and Evaluation Criteria Development
Literature searches will be completed for up to 5 chemicals. Under this PWS, an episode of work (aka "request") will be initiated by written Technical Direction (TD). Each request will specify deadlines for delivering drafts and final work products. A TD initiation meeting between the contractor and the WACOR shall take place no later than one week after the TD is received.

The contractor shall develop literature search strategies as specified in each TD. Each TD will require a literature search strategy for each chemical in accordance with the ICF March 2017 pQAPP for existing data.

Specifically, the literature searches should address all literature related to health effects in animals and humans resulting from acute, subchronic, and chronic exposure durations, and from inhalation, oral, dermal, and injection exposure studies. The contractor shall identify epidemiological studies and in vitro studies related to mechanism of action. The contractor shall also identify data specifically useful for addressing risks to children and other susceptible populations (e.g., the elderly, nursing and pregnant women). The contractor shall also include studies of absorption, distribution, metabolism, and elimination; and models useful for dose-response assessment such as dosimetry models and physiologically-based pharmacokinetic (PBPK) models. The literature searches should also address all literature related to physical and chemical properties, occurrence and environmental fate.

The health effects support documents for PFOA and PFOS should serve as an example to structure the search for this information (https://www.epa.gov/sites/production/files/2016-05/documents/pfoa_hesd_final_508.pdf and https://www.epa.gov/sites/production/files/2016-05/documents/pfos_hesd_final_508.pdf).

In addition to the traditional search engines such as PubMed, Toxline, Web of Science and other databases, the literature search strategy shall also include searches for relevant domestic and international non-periodical literature, such as books, technical reports, monographs, and conference and symposium proceedings prepared by select committees or bodies (e.g., such as those convened by the National Academy of Sciences or the World Health Organization). Additionally, include searches of secondary sources such as Registry of Toxic Effects of Chemical Substance (RTECS), National Toxicology Program (NTP), National Cancer Institute (NCI), National Institute for Environmental Health Sciences (NIEHS), National Center for Toxicological Research (NCTR), TSCA Test Submissions (TSCATS) database,

etc., for unpublished or interim research reports relevant to the subject of the search. Appropriate EPA health assessment documents, guidelines, and other secondary sources such as Agency for Toxic Substances and Disease Registry (ATSDR) Toxicological Profiles shall also be used to identify relevant literature.

At the TD initiation meeting, the contractor and the WACOR will discuss the elements to be included in the literature search strategy as well as the strategy to tag the literature. The contractor shall deliver the literature search strategy as a Word document, two weeks after the task initiation meeting. The WACOR will provide feedback as necessary and will instruct the contractor when to initiate the literature searches.

Deliverable 1: Technical direction (TD) initiation meeting
Due Date: Within one week of receipt of TD

Deliverable 2: Literature search strategy document
Due Date: Two weeks after TD initiation meeting

Task 2.2 Conduct Literature Searches and Provide Documentation
Once the literature search strategy has been approved by the WACOR, the contractor shall conduct the literature searches, remove duplicates and compile the results. The references shall be tagged as relevant, not relevant, and unsure. As work progresses on this task, the contractor shall periodically consult with the WACOR to discuss the appropriate characterization of any studies for which inclusion/exclusion is unclear.

The contractor shall develop Excel spreadsheets with a tab for:

1) relevant studies
2) studies that were found in the search, but were deemed not relevant and the reasons why they were not relevant, and
3) studies the contractor could not determine as relevant or not relevant for further review.

The Excel spreadsheets should be completed so that it is compatible for .csv to be uploaded into other software programs such as Distiller or HAWC.

The contractor shall deliver the spreadsheets for the WACOR's review 1-3 weeks after the completion of the literature search, depending on the number of references compiled.

The WACOR will work in collaboration with the contractor to determine if the studies on tab 3 are relevant for further review. The contractor shall update the spreadsheet once decisions are made about tab 3 and the WACOR approves the other tabs.

Additional documentation of the literature searches shall be added into the Word files containing the search and tagging strategies for the chemical created in Task 1. This additional documentation shall contain at a minimum search strings, results (number of citations), and date of searches. It should outline the specific databases examined, keywords employed, number of hits, and any limits of the search. In addition, the number of relevant papers for each chemical should be identified by the predetermined tags where possible (e.g.,

human, animal toxicity, toxicokinetics, PBPK modeling, mechanism studies, etc).

Deliverable 1: Draft literature search results in a three-tabbed excel spreadsheet
Due Date: 1-3 weeks after test screening results meeting

Deliverable 2: Finalized literature search results in a three-tabbed excel spreadsheet
Due Date: 1 week after WACOR's approval of the draft

Task 3: Retrieval of Relevant Literature
The contractor shall retrieve all pertinent references according to ICF SOP for literature retrieval (SOP No. ICF-7006) The contractor shall first discuss with the WACOR about prioritizing the references needed. For studies deemed insufficient, the contractor shall collate abstracts only. The contractor shall communicate as necessary with the EPA WACOR regarding difficult to obtain references and foreign language documents. The WACOR will make a determination as to whether or not to pursue retrieval of such documents. Task 2 deliverable, i.e., copies of relevant references, shall be provided in electronic format (generally in pdf format).

Deliverable 1: PDFs of approved references
Due Date: 1-2 weeks after WACOR's approval of the completed literature searches

Task 4: General Support of Systematic Review
The contractor shall, based on written technical direction given by the WACOR, provide support in tagging relevant studies through Distiller and/ or in extracting data from relevant references into HAWC. A weekly update call with the WACOR will be required for this work assignment, as needed. Details on the scope and LOE will be provided by the WACOR through written technical direction, as further information becomes available.

Task 5: General Project Support
The contractor shall, based on written technical direction given by the WACOR, provide support on specific data analyses may be required for briefings and/or communication materials. Such analyses would be based on written technical direction provided by the WACOR. These analyses are generally to support decision-making and usually have a defined scope to address specific risk management questions. Updates and other support materials may include, but are not limited to, short briefing documents, white papers and PowerPoint presentations. The WACOR may request the contractor to participate in and/or conduct briefings. A weekly update call with the WACOR may be required for this work assignment, on an as needed basis.

General Requirements of the Work Assignment and Schedule:
Due Dates: The contractor shall provide due dates that are mutually acceptable with the WACOR. The contractor shall notify the WACOR in advance, if a due date will not be met and request a revised date.

Delays: The contractor shall make every effort to ensure there are no contractor-caused delays. If a delay is inevitable, it is the contractor's responsibility to notify the WACOR at the first sign of delay. A revised schedule will then be worked out.

Draft Documents: The contractor may be required to submit draft documents. Draft documents shall be prepared in an electronic format compatible with current Microsoft products. The WACOR will provide comments on draft submissions prior to submission of final documents.

Final Documents: The contractor shall submit final documents both electronically and in hardcopy to the WACOR.

Travel: No travel is anticipated under this task assignment.

Task	Task #	Milestones and Due Dates
Task 1: Work plan, monthly progress reports and quality assurance		
Workplan	1.1	Per contract requirements
Monthly Progress Reports	1.2	Per contract requirements
Task 2: Systematic Literature Search		
Literature Search Strategy and Evaluation Criteria Development	2.1	Throughout the period of performance. TD initiation meeting to be held within 7 calendar days of receipt of a TD. Subsequent meetings to be held roughly weekly, as needed. The literature search strategy for each TD is due to WACOR within 14 calendar days of the TD initiation meeting.
Conduct Literature Searches and Provide Documentation	2.2	Literature searches conducted upon WACOR's approval of the literature search strategy. Draft excel spreadsheets documenting the results of the literature searches are due 7 – 21 days after approval of the literature search strategy, depending on the number of results. Meetings to be held roughly weekly, as needed, to discuss progress and results. Final literature search Excel spreadsheets due 7 days after WACOR approval of draft spreadsheets.

Task 3: Retrieval of Relevant Literature		
PDFs of approved references	3.1	1-2 weeks after WACOR confirmation of approved and relevant literature
Task 4: General Support of Systematic Review		
Support tagging of literature in Distiller and/or extraction of data from relevant literature in HAWC	4.1	On-going
Task 5: General Project Support		On-going

EPA

United States Environmental Protection Agency
Washington, DC 20460

Work Assignment

Work Assignment Number: 2-17

☐ Other ☐ Amendment Number:

Contract Number	Contract Period	Title of Work Assignment/SF Site Name
EP-C-16-011	11/01/2016 To 06/30/2020 Base Option Period Number 4	NWP Research Coordination

Contractor: ICF Incorporated, L.L.C.

Specify Section and paragraph of Contract SOW: 3.1.11,3.4,3.6,3.7

Purpose:
- [X] Work Assignment
- [ ] Work Assignment Amendment
- [ ] Work Plan Approval
- [ ] Work Assignment Close-Out
- [ ] Incremental Funding

Period of Performance: From 07/01/2018 To 06/30/2019

Comments:

☐ Superfund — Accounting and Appropriations Data — [X] Non-Superfund

SFO (*Max 2*): ☐

Note: To report additional accounting and appropriations date use EPA Form 1900-69A.

Line	DCN (Max 6)	Budget/FY (Max 4)	Appropriation Code (Max 6)	Budget Org/Code (Max 7)	Program Element (Max 9)	Object Class (Max 4)	Amount (Dollars)	(Cents)	Site/Project (Max 8)	Cost Org/Code
1										
2										
3										
4										
5										

Authorized Work Assignment Ceiling

	Cost/Fee:	LOE:
Contract Period: 11/01/2016 To 06/30/2020		0
This Action:		600
Total:		600

Work Plan / Cost Estimate Approvals

	Cost/Fee	LOE:
Contractor WP Dated:		
Cumulative Approved:		

Work Assignment Manager Name: Mary Reiley (Signature) (Date)	Branch/Mail Code: Phone Number: 202-566-1123 FAX Number:
Project Officer Name: Shirley Harrison (Signature) (Date)	Branch/Mail Code: Phone Number: 202-566-1107 FAX Number:
Other Agency Official Name (Signature) (Date)	Branch/Mail Code: Phone Number: FAX Number:
Contracting Official Name: Kathleen Rechenberg (Signature) (Date)	Branch/Mail Code: Phone Number: 513-487-2853 FAX Number:

PERFORMANCE WORK STATEMENT
ICF CONTRACT EP-C-16-011
WORK ASSIGNMENT #2-17

TITLE: Support for National Water Program Research Coordination

WORK ASSIGNMENT CONTRACTING OFFICER'S REPRESENTATIVE (WACOR):
Mary Reiley
Health and Ecological Criteria Division, 4304T
Office of Science and Technology, Office of Water
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460
Phone: 202-566-1123 Fax: 202-566-1139

ALTERNATE WACOR (ALT WACOR):
Michael Elias
Health and Ecological Criteria Division, 4304T
Office of Science and Technology, Office of Water
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460
Phone: 202-566-0120 Fax: 202-566-1139

CONTRACT PWS: 3.1.11, 3.4, 3.6, 3.7

LOE HOURS: 800

PERIOD OF PERFORMANCE: Date of Issuance through June 30, 2019

BACKGROUND:

The Office of Water (OW) Program Offices (Office of Science and Technology (OST), Office of Groundwater and Drinking Water (OGWDW), Office of Wetlands Oceans and Watersheds (OWOW), Office of Wastewater Management (OWM) and the Immediate Office (IO)) and Regions develop and maintain a National Water Program Research Strategy to: (1) outline programmatic objectives and research questions and detail the necessary scientific and technical investigations and products to answer them; and (2) advance collaboration with EPA and non-EPA investigators. The Strategy is a resource for National Water Program (NWP) staff and managers as they work with internal and external research organizations to leverage Water research needs. OW implements the Research Strategy through meetings, workshops, outreach, communications, annual reports, focused strategy and action plan development. The National Water Program (NWP) also maintains an Executive Committee for Research (Ex.Com) which is staffed by the NWP Research Points of Contact (POC). The Ex.Com and POC work together to identify the science, tools, and methods needed to advance programmatic goals and environmental outcomes and work with ORD, other researchers, and stakeholders to translate those needs into science questions and research portfolios. The POC is a liaison, information gatherer, and consensus builder between the Ex.Com., ORD, and other partners and stakeholders. The strategic planning, technical, outreach, and workshop support contemplated in this PWS is a continuation of work

provided by the Office of Wastewater Management (OWM) Cadmus Group Contract (EP-C-12-023) during the contract option periods, WA #2-24, 3-24, 4-24, 5-24, and 6-24).

Objective 1: Provide program management and analysis, technical writing, meeting*, workshop*, and outreach support for the National Water Program Executive Committee for Research (Water-ECR made up of the OW DAA and OD's) and National Water Program Points of Contact (NWP-POCs made up of senior staff from OST, OGWDW, OWM, OWOW, IO, Regions, and the OW Associate Director for Science) related to research coordination between OW and other EPA Offices and current and potential non-EPA collaborators as well as Strategy maintenance and implementation.

*Some meeting and workshop session costs are anticipated to reach the $20K threshold for SRO approval.

Objective 2: Provide support to identify science needs and conduct and document strategic planning for the National Water Program Executive Committee for Research and NWP-POCs related to collaborative and coordinated research and science-based policy goals.

QUALITY ASSURANCE:

The tasks in this work assignment do not require the use of primary or secondary data. Consistent with the Agency's quality assurance (QA) requirements, the contractor does not need to supplement the Contract Level Quality Assurance Project Plan (QAPP) or to prepare a Project Specific Quality Assurance Project Plan (PQAPP).

PERFORMANCE WORK STATEMENT (PWS):

Task 1: Work Plan and Monthly Progress Reports

The contractor shall develop a work plan that describes how each task will be carried out. The work plan shall include a schedule, staffing plan, level of effort (LOE), and cost estimate for each task, the contractor's key assumptions on which staffing plan and budget are based, and qualifications of proposed staff. In addition, the workplan shall include the requirement that all electronic and information technology (EIT) and all EIT deliverables be Section 508 compliant in accordance with the policies referenced at http://www.epa.gov/accessibility/. If a subcontractor(s) is proposed and subcontractors are outside the local metropolitan area, the contractor shall include information on plans to manage work and control costs.

In addition, the contractor shall prepare a statement indicating that this WA is a continuation of work under the OWM Cadmus Group Contract (EP-C-12-023, WA #2-24, 3-24, 4-24, 5-24 and 6-24) and will outline the transition process to ensure continuity in the work. In addition, the work plan shall specify that a Supplemental Project Specific Quality Assurance Project Plan (SQAPP) appending the Contract Level QAPP or a PQAPP is not required. This task also includes monthly progress and financial reports. The monthly progress report shall summarize activities conducted for the reporting period. Monthly financial reports must include a table with the invoice LOE and costs` broken out by the tasks in this WA. These reports should also indicate an estimate for the next month by task and if any laggings costs are expected. EPA realizes these estimates are just approximate values and is interested in having this information for internal budgeting purposes.

Deliverable: Work plan and monthly progress reports submitted in accordance with contract requirements.

Task 2: Maintain National Water Research Strategy
The NWP Research Strategy will provide conceptual direction but the specific project needs must be adjusted from year to year to reflect changes in budgets, priorities, completed, and new work. The contractor shall maintain the National Water Research Strategy (in its Excel spreadsheet format) to reflect new areas and priorities for inquiry to support the National Water Program. Information and leads on new areas and priorities will be provided by EPA. As directed by the WACOR, the contractor shall update the Excel spreadsheet that serves as the science needs detail for the Strategy for the FY19-FY22 research planning cycle each year between June 1 and October 30 for annual adjustments with specific guidance and provided from the WACOR through technical direction. The contractor shall work with the WACOR to revise or prepare a narrative to provide context to the spreadsheet.

Deliverable: The spreadsheet will be maintained in Excel. The narrative will be maintained in Word.

Task 3: Support to NWP-POCs and Water Executive Committee for Research
The contractor shall provide technical and public presentation and outreach writing, as well as meeting logistical and facilitation support for the research coordination activities and efforts of the NWP-POCs and NWP Executive Committee on Research. This support shall include the creation of: briefing materials (power point presentations, agendas, Fact Sheets, resource binders and contents, posters), outreach products, project and manuscript tracking coordination, spreadsheets, and schedules, and focused strategy and action plans, as well as meeting and workshop logistics, expert identification, invites, and facilitation.

3a. The contractor shall anticipate 1 meeting/briefing of the Ex.Com of 1 day duration in the Washington, D.C. area over the course of the period of performance that will likely require facilitation (basic familiarity with the NWP Research Strategy and ORD Strategic Research Plans is needed. Technical/scientific background is not necessary) and logistical assistance (note taking, advance materials, name placards, hotel block). The contractor can assume that EPA will provide the facilities (i.e., there is no need to plan for facilities or meal charges). EPA does not anticipate this meeting reaching the agency's $20,000 threshold for meeting/conference spending outlined in Section I.

Deliverable: 1 OW-ORD Management Meeting: contractor facilitated, date TBD, 50 attendees, briefing materials, including but not limited to power point, spreadsheets, and fact sheets delivered in appropriate electronic format as identified by the WACOR.

3b. The contractor shall anticipate 1 expert technical workshop of 2.5 days in duration in the Washington, D.C. area, for 50 people, in Sept-Oct 2019 timeframe. The contractor shall provide logistical (including venue, room block, name badges, advance materials, note taking, etc.), facilitation (including materials/tools), assist identifying expert participants, manage invitations, pre-meeting preparations (agendas, advanced conference calls/webinars, etc.) and post meeting materials (proceedings document, compilation of presentations, etc.)

Deliverable: 1 Experts Technical Workshop: facilitated 2.5 days workshop for 50 invited attendees (contractor provide travel and accommodation for 4 international and 12 from across the US), pre and post meeting materials, venue, logistics, experts identification/invitation.

3c. The contractor shall anticipate preparing a Strategy pamphlet, or poster for use with current and potential collaborators that shall be web-ready (PDF and 508 compliant) and delivered in

Word (or the appropriate software for the content and purpose) and PDF. Presentation posters shall have a maximum finished size of 3' x 4'and printed in full color on quality stock.

Deliverable: Anticipate delivery of: 1 poster; 1 pamphlet.

3d. The contractor shall maintain a manuscript review tracking spreadsheet and work with the WACOR and lead staff to coordinate reviews and comments on manuscripts for which official review has been requested across the National Water Program and through OW-IO. The contractor shall anticipate tracking approximately 75 manuscripts distributed over the course of a year. Access to the Share-Point Site containing the tracking spreadsheet will be made available through the WACOR. The WACOR and contractor shall design an SOP for tracking/review process.

Deliverable: Real-time manuscript entry and updates to the tracking spreadsheet. Minimum of weekly updates on manuscript status during weekly call with WACOR. More frequent WACOR-contractor conversations/email should a manuscript review be particularly challenging, delayed, or have other complicating factors.

SCHEDULE OF DELIVERABLES:

Task	Deliverable	Due to EPA	No of Copies/Medium
1	Work Plan and Monthly Progress Reports	Per Contract Requirements	Per Contract Requirements
2	Excel spreadsheet for annual adjustments	Between June 1 and October 30 (planning cycle)	Electronic Excel
2	Narrative context to spreadsheet	Updated concurrently with spreadsheets	Electronic Word
3a	OW-ORD Management Meeting briefing materials and facilitation	Provided per Technical Direction	Approx. 40/ Electronic Format
3b	Experts Technical Workshop	Anticipate Sept-Oct 2019	Approx. 50/ Electronic Format Word, Excell, PDF, potentially 508 compliant
3c	Poster and/or Pamphlet	Provided per Technical Direction	Poster: 1 in hardcopy as above and Electronic PDF and 508; Pamphlet: 1-page double sided Electronic PDF, 508, and Word
3d	Manuscript review tracking spreadsheet and review/comment coordination	Real-time tracking	Excel Spreadsheet in SharePoint

CONFERENCE/MEETING GUIDELINES AND LIMITATIONS:

The contractor shall immediately notify the EPA Contracting Officer, CL COR and WA COR of any anticipated event involving support for a meeting, conference, workshop, symposium, retreat, seminar or training that may potentially incur $20,000 or more in cost during performance. Conference

expenses are all direct and indirect costs paid by the government and include any associated authorized travel and per diem expenses, room charges for official business, audiovisual use, light refreshments, registration fees, ground transportation and other expenses as defined by the Federal Travel Regulations. All outlays for conference preparation should be included, but the Federal employee time for conference preparation should not be included. After notifying WACOR of the potential to reach this threshold, the contractor shall not proceed with the task(s) until authorized to do so by the Contracting Officer.

TRAVEL:

Travel is authorized for quarterly meetings with the WACOR (if determined to be needed by the WACOR via technical direction) and facilitating workshops and meetings. Quarterly Contractor-WACOR meetings (typically 1.5 hours) and up to two workshops and meetings (typically 1 – 2 days) would be held at EPA Headquarters in Washington, D.C. All travel shall be pre-approved by the WACOR and the Contract-Level COR prior to travel in accordance with EPA and FAR requirements.

SPECIAL REPORTING REQUIREMENTS:

The contractor shall hold weekly 30-60 minutes conference calls for planning purposes with the WACOR to provide updates on project status, next steps, and resolve challenges. More frequent communications via email/phone are necessary if there are delays or other impediments to timely completion. The contractor shall report the number of hours and funds expended monthly in each monthly report tracking the workshop separately from other activities.